



User Manual for  
ARGOS FP Series Products  
And  
FlexiSoft

Ver.: 1.00

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## **SAFETY PRECAUTIONS**

This section provides general precautions for using the ARGOS FP Products.

The information contained in this section is important for the safe and reliable application of the Unit. You must read this section and understand the information contained before attempting to set up or operate a unit.

1. Intended Audience
2. Purpose and Scope of this Manual
3. General Precautions
4. Safety Precautions
5. Caution

## 1. Intended Audience

A **Qualified Person** is one that has the skills and knowledge relating to the construction, installation, operation, and maintenance of the electrical equipment and has received safety training on the hazards involved (Refer to the latest edition for additional safety requirements).

**Qualified Personnel** shall:

- Have carefully read the entire operation manual.
- Be trained and authorized to safely energize, de-energize, ground, lockout and tag circuits and equipment, and clear faults in accordance with established safety practices.
- Be trained in the proper care and use of protective equipment such as safety shoes, rubber gloves, hard hats, safety glasses, face shields, flash clothing, etc., in accordance with established safety practices.
- Be trained in rendering first aid.

## 2. Purpose and scope of this Manual

Thank you for purchasing the ARGOS FP series product from Diseños y Tecnología S.A. ARGOS FP Series products are configured with Microsoft Windows based software (-----). This manual provides information on how to safely install, operate, and maintain your product.

Read the manual completely before installing, operating, or performing maintenance on this equipment.

This manual and the accompanying drawings should be considered a permanent part of the equipment and should be readily available for reference and review.

DITEL reserves the right, without prior notice, to update information, make product changes, or to discontinue any product or service identified in this publication.

## 3. General Precautions

The user must operate the product according to the performance specifications described in the operational manual.

- The ARGOS FP models are a general-purpose products. It is a system component and is used in conjunction with other items of industrial equipment such as PLCs, Loop Controllers, Adjustable Speed Drives, etc.
- **A detailed system analysis and job safety analysis should be performed by the systems designer or systems integrator before including the unit in any new or existing system.** Contact DITEL for options availability and for application-specific system integration information if required.
- The product may be used to control an adjustable speed drive connected to high voltage sources and rotating machinery that is inherently dangerous if not operated safely. Interlock all energy sources, hazardous locations, and guards in order to restrict the exposure of personnel to hazards. The adjustable speed drive may start the motor without warning. Signs at the equipment installation must be posted to this effect. A familiarity with Autorestart settings is a requirement when controlling adjustable speed drives. Failure of external or ancillary components may cause intermittent system operation, i.e., the system may start the motor without warning or may not stop on command. **Improperly designed or improperly installed system interlocks and permissives may render a motor unable to start or stop on command**
- Control through serial communications can fail or can also override local controls, which can create an unsafe condition. System safety features should be employed and designed into the integrated system in a manner such that system operation, even in the event of system failure, will not cause harm or result in personnel injury or system damage. Use of the built-in system protective features and interlocks of the equipment being controlled is highly recommended (i.e., emergency-off, overload protection, etc.)
- **Never use the ARGOS FP units to perform emergency stops.** Separate switches outside the product, the PLC, and the ASD should be used for emergency stops.

Changes or modifications to the ARGOS FP program should not be made without the approval of the system designer or systems integrator. Minor changes or modifications could cause the defeat of safety interlocks and permissives. Any changes or modifications should be noted and included with the system documentation.



**WARNING** It is extremely important that the unit and other peripherals be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human beings.



**WARNING** Do not use input functions as PT touch switches for applications where danger to human life or serious damage is possible, or for emergency switch applications.

#### 4. Safety Precautions

Please observe the following precautions when installing the unit. Failure to comply with these restrictions could result in loss of life, serious personal injury, or equipment damage.



**WARNING** Do not operate the unit in areas subject to explosion due to flammable gases, vapors, or dusts.



**WARNING** Do not connect the unit to an AC power source. You will cause permanent damage to the unit.



**WARNING** Do not attempt to use a DC power supply that does not meet unit power requirements. You may cause malfunction or permanent damage to unit.



**WARNING** Do not power the unit with a DC power supply used for inductive loads or for input circuitry to the programmable logic controller. Severe voltage spikes caused by these devices may damage the unit.

#### 5. Caution



- Upon receipt of the equipment inspect the packaging and equipment for shipping damage.
- Carefully unpack the equipment and check for parts that were damaged from shipping, missing parts, or concealed damage. If any discrepancies are discovered, it should be noted with the carrier prior to accepting the shipment, if possible. File a claim with the carrier if necessary and immediately notify your DITEL representative.
- **DO NOT** install or energize equipment that has been damaged. Damaged equipment may fail during operation resulting in further equipment damage or personal injury.
- Check to see that the model number specified on the nameplate conforms to the order specifications.
- Modification of this equipment is dangerous and must not be performed except by factory trained representatives. When modifications are required contact your DITEL representative.
- Inspections may be required before and after moving installed equipment.
- Keep the equipment in an upright position as indicated on the shipping carton.
- Contact your DITEL representative for assistance if required.

#### Handling and Storage:

- Use proper lifting techniques when moving the product; including properly sizing up the load, and getting assistance if required.
- Store in a well-ventilated covered location and preferably in the original carton if the equipment will not be used upon receipt.

- Store in a cool, clean, and dry location. Avoid storage locations with extreme temperatures, rapid temperature changes, high humidity, moisture, dust, corrosive gases, or metal particles.
- Do not store the unit in places that are exposed to outside weather conditions (i.e., wind, rain, snow, etc.).

#### Disposal:

- Never dispose of electrical components via incineration. Contact your state environmental agency for details on disposal of electrical components and packaging in your area.

#### Installation Precautions:

- Location and Ambient Requirements
  - a) Adequate personnel working space and adequate illumination must be provided for adjustment, inspection, and maintenance of the equipment.
  - b) Avoid installation in areas where vibration, heat, humidity, dust, fibers, steel particles, explosive/corrosive mists or gases, or sources of electrical noise are present.
  - c) The installation location shall not be exposed to direct sunlight.
  - d) Allow proper clearance spaces for installation. Do not obstruct the ventilation openings. Refer to the recommended minimum installation dimensions as shown on the enclosure outline drawings.
  - e) The ambient operating temperature shall be between 0° and 50° C (32° and 122° F).
- Mounting Requirements
  - a) Only **Qualified Personnel** should install this equipment.
  - b) Install the unit in a secure upright position in a well-ventilated area.
  - c) A noncombustible insulating floor or mat should be provided in the area immediately surrounding the electrical system at the place where maintenance operations are to be performed.
- Conductor Routing and Grounding
  - a) Use separate metal conduits for routing the input power, and control circuits.
  - b) A separate ground cable should be run inside the conduit with the input power, and control circuits.
  - c) **DO NOT** connect control terminal strip return marked CC to earth ground.
  - d) Always ground the unit to prevent electrical shock and to help reduce electrical noise.

**The Metal Of Conduit Is Not An Acceptable Ground.**

## **INTRODUCTION**

In this chapter. . . .

- \* Purpose of this Manual
  - ARGOS FP Basics
  - Hardware Configuration
  
- \* ARGOS Series Overview
  - What is ARGOS?
  - How does ARGOS work?

## 1.1 Purpose of this manual

Thank you for purchasing ARGOS Series Products. ARGOS Series FP Products are versatile operator interfaces with Microsoft® Windows based configuration Software.

This Manual explains the operation of the ARGOS Series and how to implement available features using the FlexiSoft Configuration Software. This manual will help you to install, configure and operate your FP product.

### 1.1.1 ARGOS Basics

Operator Interface Terminals (FPs) provide much more versatility than traditional mechanical control panels. An FP allows a plant floor operator to monitor current conditions of a control system and, if necessary, to initiate a change in the operation of the system. FPs connect to programmable logic controllers (PLCs) typically through the serial communications port. The FP can be programmed to monitor and/or change current values stored in the data memory of the PLC.

FPS are having graphics based displays with touch screen and keypad having function keys. Thus FP provides much more flexibility in preparing application. Keys can be created in a touch screen FP that can be made visible only when needed.

What is a *Project*?

A project is an user created application in FlexiSoft Configuration Software. A project contains information such as FP model, Network Configuration, Screen information, Task information etc.

What is a *Screen*?

A screen is a visual representation of objects placed on the unit screen. Any partially sized window is usually referred to as a popup screen or window. The user can create his customized screen according to his requirements. Popup windows can also appear on the FP display by pressing buttons on the touch screen . The maximum number of screens in an application is only limited by the application memory size. A more in depth discussion on screens is covered in "Screens" section.

What is an *Object*?

An object placed on FP screen can perform actions such as displaying text messages, writing a value to a PLC register, or displaying an alarm. An object can be classified as a text or graphical object. A text object is used to display the text on the FP and can also be used to perform some action. For example, a data entry object tells the FP to continuously monitor a PLC register and allows the user to change the value in the register. Some objects can display graphics whose shape depends on the value of a register. These objects may also change the value of a PLC tag. An example is a Bit Button Object that creates a graphic object on the FP. When pressed, it activates a bit in the PLC.

### 1.1.2 Hardware Requirements

The following basic PC hardware configuration is needed to configure and operate your FlexiSoft Configuration Software.

Minimal PC configuration for Windows2000 / XP:

DEVICE	RECOMMENDED
Processor	800MHz Pentium processor OR equivalent processor
Operating System	Microsoft Windows 2000 with SP4 Microsoft Windows XP Professional / Home Edition with SP2
RAM	256MB
Hard Disk Space	800MB (including 200MB for the .NET Framework Redistributable)
Display	1024 x 768 High Color 16-bit

Mouse/Keyboard Required

Minimal PC configuration for Vista/7:

DEVICE	RECOMMENDED
Processor	1GHz Pentium processor or equivalent processor
Operating System	Microsoft Windows Vista Home and Vista Business edition
RAM	1GB
Hard Disk Space	800MB (including 200MB for the .NET Framework Redistributable)
Display	1024 x 768 High Color 16-bit
Mouse/Keyboard	Required

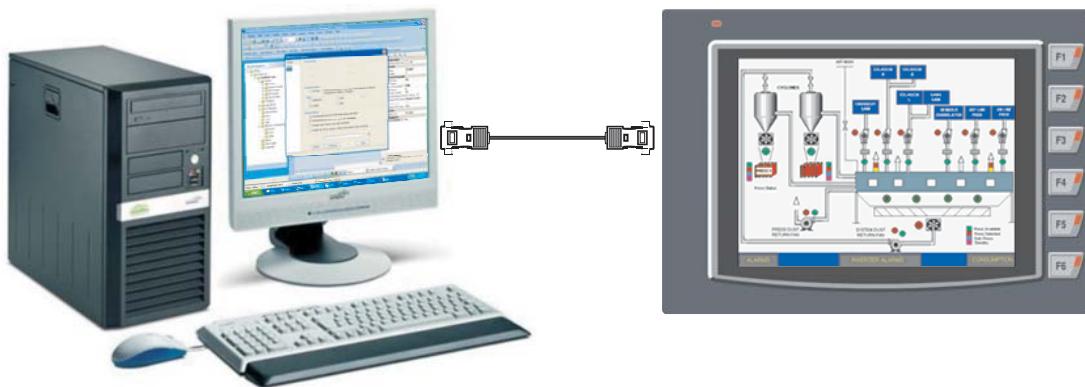
These are the minimum system requirements for a computer running the FlexiSoft Configuration software.

### 1.2.1 What is a ARGOS FP Series?

FP product line provides Human-Machine Interface to the Programmable Logic Controller. These FPs communicate with PLCs using their serial communications ports.

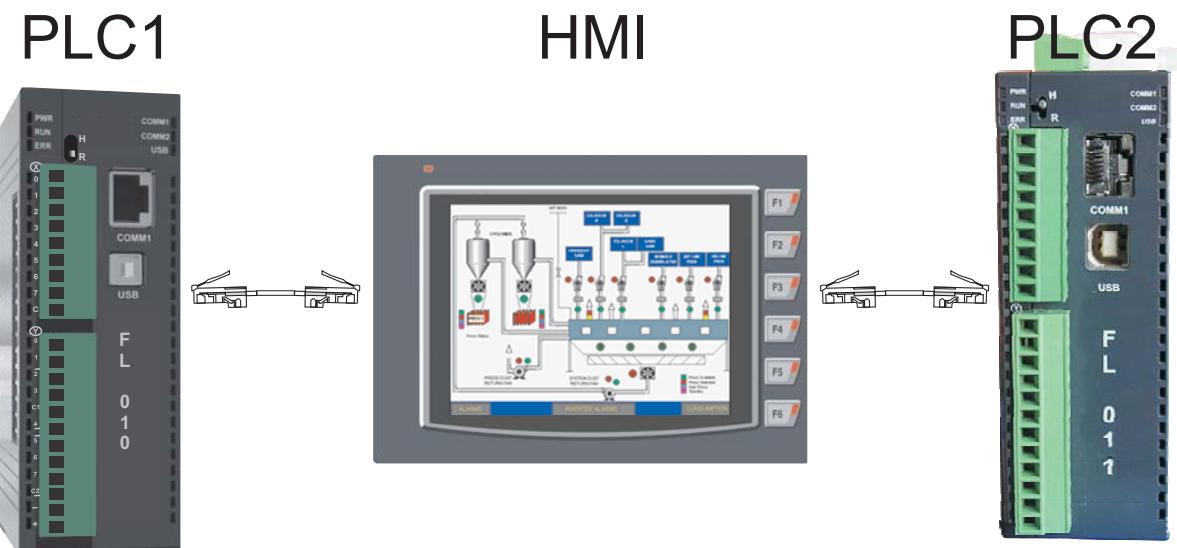
Configuration of ARGOS FP unit:

Each FP unit has to be configured using the FlexiSoft Configuration Software before connecting it to the PLC.



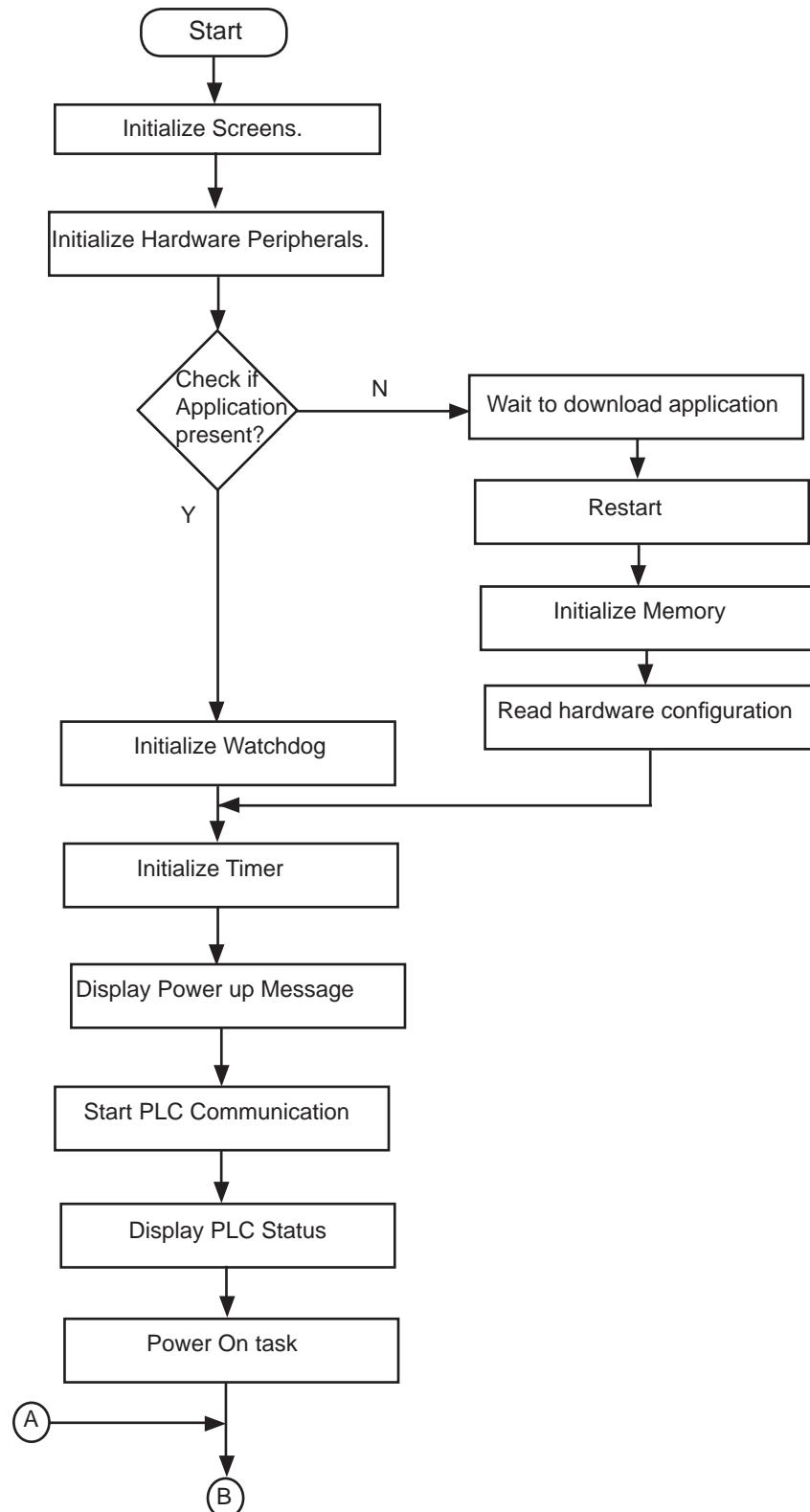
Normal Operation:

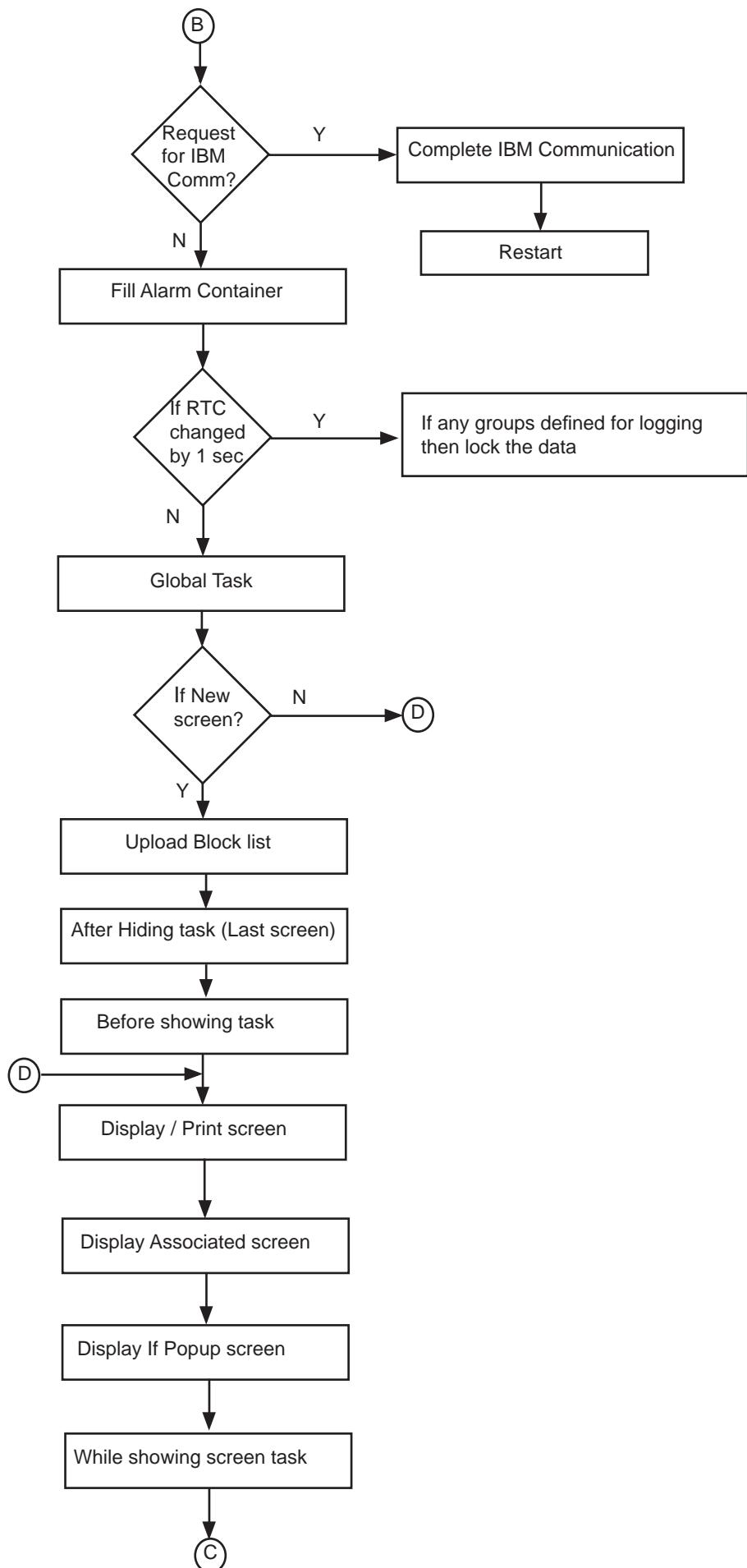
Connect FP unit to PLC using the correct PLC-FP cable. The FP can communicate with any device without making any additional hardware settings on the unit.

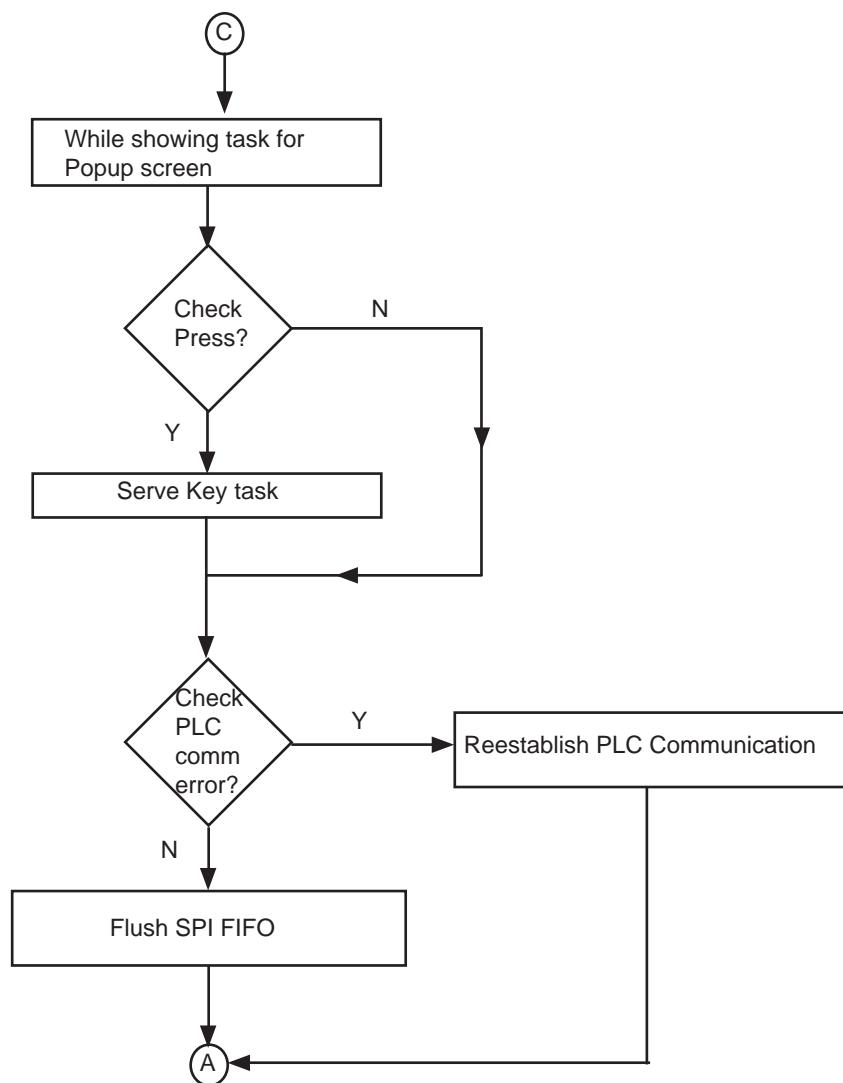


### 1.2.2 How the ARGOS works?

The FP follows a specific sequence for performing the tasks defined by the user in the application. The sequence is as shown below:







## **HARDWARE**

In this chapter. . . .

- \*     ARGOS FP Models
  - FP Models
  - Comparison between FP models
  
- \*     Installation Instructions
  - Panel cut-out for FP Models
  - Wiring Diagram
  - Communication Port

## 2.1 FP Models

FP series models are Human Machine Interfaces. FP models need +24VDC power from an external supply. ARGOS FP Models are divided into 2 (two) parts as base models and pluggable I/O models. Base Models included in the FP Series are as follows:

Catagory	Model	Description
FP4020	FP4020MR-L0808P	ARGOS Series, 16X2 LCD (Multi color) with local I/Os: 8, Dig. I/P, 8 Dig. O/P (OC PNP Type).
	FP4020MR-L0808N	ARGOS Series, 16X2 LCD (Multi color) with local I/Os: 8, Dig. I/P, 8 Dig. O/P (OC NPN Type).
	FP4020MR-L0808R	ARGOS Series, 16X2 LCD (Multi color) with local I/Os: 8, Dig. I/P, 8 Dig. O/P (Relay Type).
	FP4020MR	ARGOS Series, 16X2 LCD (Multi color), HMI only.
FP4030	FP4030MR-L1208R	ARGOS Series, 128X64 LCD (Multi color) with local I/Os: 12 Dig. I/P, 8 Dig. O/P (Relay Type)
	FP4030MR-E	ARGOS Series, 128X64 LCD (Multi color) with 3 Expansions
	FP4030MR	ARGOS Series, 128X64 LCD (Multi color), HMI Only.
	FP4030MT	ARGOS Series, 128X64 LCD (Multi color), HMI with touch screen Only.
FP4035	FP4035TN-E	ARGOS Series, 3.5" Color TFT with Ethernet and 3 Expansions
	FP4035T-E	ARGOS Series, 3.5" Color TFT with 3 Expansions
	FP4035TN	ARGOS Series, 3.5" Color TFT, with Ethernet and without expansions
	FP4035T	ARGOS Series, 3.5" Color TFT, without Ethernet and expansions
FP4057	FP4057TN-E	ARGOS Series, 5.7" Color TFT with Ethernet and 5 Expansions
	FP4057T-E	ARGOS Series, 5.7" Color TFT with 5 Expansions
	FP4057TN	ARGOS Series, 5.7" Color TFT, with Ethernet and without 5 Expansions
	FP4057T	ARGOS Series, 5.7" Color TFT, without Ethernet and Expansions
FP5043	FP5043TN-E	ARGOS Series, 4.3" Color TFT with Ethernet and 3 Expansions. Without keypad with touch screen
	FP5043T-E	ARGOS Series, 4.3" Color TFT with 3 Expansions, Without keypad with touch screen
	FP5043TN	ARGOS Series, 4.3" Color TFT, with Ethernet and without Expansions. Without keypad with touch screen
	FP5043T	ARGOS Series, 4.3" Color TFT, without Ethernet and Expansions. Without keypad with touch screen
FP5070	FP5070TN-E	ARGOS Series, 7" Color TFT with Ethernet and 5 Expansions. Without keypad with touch screen
	FP5070T-E	ARGOS Series, 7" Color TFT with 5 Expansions, Without keypad with touch screen

Catagory	Model	Description
	FP5070TN	ARGOS Series, 7" Color TFT, with Ethernet and without Expansions. Without keypad with touch screen
	FP5070T	ARGOS Series, 7" Color TFT, without Ethernet and Expansions. Without keypad with touch screen.
FP5121	FP5121TN	ARGOS Series, 12.1" Color TFT with Ethernet. Without keypad with touch screen
	FP5121T	ARGOS Series, 12.1" Color TFT. Without keypad with touch screen.

Pluggable I/O Models are also divided into two parts as: Digital and analog models

Digital Pluggable I/O Models:

FPED1600	16 Digital Inputs (sinking or sourcing)
FPED0016P	16 PNP transistor outputs (Rating: 0.5A)
FPED0016N	16 NPN transistor outputs (Rating: 0.5A)
FPED0012R	12 relays (5A per common) outputs (Relay rating: 2Amp)
FPED0808P	8 Digital inputs (PNP or NPN) and 8 PNP transistor outputs (Rating: 0.5A)
FPED-HS-0808P	8 Digital inputs (PNP or NPN) and 8 PNP transistor outputs (Rating: 0.5A), 4 high speed inputs (single phase & Quadrature), 2 PWM (Rating: 0.3A)
FPED0808N	8 Digital inputs (PNP or NPN) and 8 NPN transistor outputs (Rating: 0.5A)
FPED-HS-0808N	8 Digital inputs (PNP or NPN) and 8 PNP transistor outputs (Rating: 0.5A), 4 high speed inputs (single phase & Quadrature), 2 PWM (Rating: 0.3A)

Analog Pluggable I/O Models:

FPEA0202L	2 Analog inputs [Resolution:12 bit], (4 to 20mA, 0 to 10V, -10 to +10V, 0 to 20mA) and 2 analog outputs [Resolution:12 bit] (4 to 20mA, 0 to 10V, 0 to 20mA)
FPEA0400L	4 Analog inputs [Resolution:12 bit], (4 to 20mA, 0 to 10V, -10 to +10V, 0 to 20mA)
FPEA-0402U-16	4 Universal Analog Inputs ( RTD, TC, 4-20 mA, 0-20mA, 0-50mV, 0-100mV, 0-5VDC, 0-10VDC), 2 Outputs voltage/current (16 Bit)

Pluggable Comm Ports:

GSM*	GSM modem
NIO-PB-DPS*	Profibus DP Slave network module
NIO-CAN*	CAN open network module (CAN open as well as J1939)
NIO-Ethernet*	Ethernet network module. (ModbusTCP/IP)

Note \*: For more details, contact factory

## 2.2 FP Model's feature matrix (based on product codes)

Model	Display	Local I/O	Expansion	Ethernet ports	USB	RTC
FP4020MR-L0808P	2x16 Text Multi color backlit	8 DC in 8 PNP 0.5A	No	No	Device	Yes
FP4020MR-L0808N	2x16 Text Multi color backlit	8 DC in 8 NPN 0.5A	No	No	Device	Yes
FP4020MR-L0808R	2x16 Text Multi color backlit	8 DC in 6 Relays 2A 2 NPN 0.5A	No	No	Device	Yes
FP4020MR	2x16 Text Multi color backlit	NA	No	No	Device	Yes
FP4030MR-L1208R	128x64 Mono 3" Multi color backlit	12 DC in 6 Relays 2A 2 NPN 0.5A 4 0-10 V 10 bit (Analog )	No	No	Device	Yes
FP4030MR-E	128x64 Mono 3" Multi color backlit	None	3	No	Device	Yes
FP4030MR	128x64 Mono 3" Multi color backlit	None	No	No	Device	Yes
FP4035TN-E	320x240 QVGA 3.5" Color TFT	None	3	Yes	Device and Host	Yes
FP4035T-E	320x240 QVGA 3.5" Color TFT	None	3	No	Device and Host	Yes
FP4035TN	320x240 QVGA 3.5" Color TFT	None	No	Yes	Device and Host	Yes
FP4035T	320x240 QVGA 3.5" Color TFT	None	No	No	Device and Host	Yes
FP4057M-E	320x240 QVGA 5.7" Mono STN 16 Grey scales	None	5	No	Device and Host	Yes
FP4057TN-E	320x240 QVGA 5.7" Color TFT	None	5	Yes	Device and Host	Yes
FP4057T-E	320x240 QVGA 5.7" Color TFT	None	5	No	Device and Host	Yes
FP4057TN	320x240 QVGA 5.7" Color TFT	None	No	Yes	Device and Host	Yes
FP4057T	320x240 QVGA 5.7" Color TFT	None	No	No	Device and Host	Yes

Model	Display	Local I/O	Expansion	Ethernet ports	USB	RTC
FP4030MT	128X64 Mono Multi color back lit	None	No	No	Device	Yes
FP5043TN-E	480x272 WQVGA 4.3" Color TFT	None	3	Yes	Device and Host	Yes
FP5043T-E	480x272 WQVGA 4.3" Color TFT	None	3	No	Device and Host	Yes
FP5043TN	480x272 WQVGA 4.3" Color TFT	None	No	Yes	Device and Host	Yes
FP5043T	480x272 WQVGA 4.3" Color TFT	None	No	No	Device and Host	Yes
FP5070TN-E	800x480 WVGA 7" Color TFT	None	3	Yes	Device and Host	Yes
FP5070T-E	800x480 WVGA 7" Color TFT	None	3	No	Device and Host	Yes
FP5070TN	800x480 WVGA 7" Color TFT	None	No	Yes	Device and Host	Yes
FP5070T	800x480 WVGA 7" Color TFT	None	No	No	Device and Host	Yes
FP5121TN	800x600 SVGA 12.1" Color TFT	None	None	Yes	Device and Host	Yes
FP5121T	800x600 SVGA 12.1" Color TFT	None	None	No	Device and Host	Yes

### 2.3 FP Model's feature matrix (based on other specification)

Model	Display	Keys TS	Memory	Ladder Steps	Application memory	Logging	Serial ports
FP4020MR-L0808P	2x16 Text Multicolor backlit	18 keys No	512K	10K Steps	84K	N.A.	RS232/485
FP4020MR-L0808N	2x16 Text Multicolor backlit	18 keys No	512K	10K Steps	84K	N.A.	RS232/485
FP4020MR-L0808R	2x16 Text Multicolor backlit	18 keys No	512K	10K Steps	84K	N.A.	RS232/485
FP4020MR	2x16 Text Multicolor backlit	18 keys No	512K	10K Steps	84K	N.A.	RS232/485
FP4030MR-L1208R	128x64 Mono 3" Multi color backlit	18 keys No	512K +1MB	10K Steps	1MB	N.A	1
FP4030MR-E	128x64 Mono 3" Multi color backlit	18 keys No	512K +1MB	10K Steps	1MB	N.A	1
FP4030MR	128x64 Mono 3" Multi color backlit	18 keys No	512K +1MB	10K Steps	1MB	N.A	1
FP4035TN-E	320x240 QVGA 3.5" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	1
FP4035T-E	320x240 QVGA 3.5" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	1
FP4035TN	320x240 QVGA 3.5" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	1
FP4035T	320x240 QVGA 3.5" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	1
FP4057M-E	320x240 QVGA 5.7" Mono STN 16 Grey scales	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	2
FP4057TN-E	320x240 QVGA 5.7" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	2
FP4057T-E	320x240 QVGA 5.7" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	2
FP4057TN	320x240 QVGA 5.7" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	2
FP4057T	320x240 QVGA 5.7" Color TFT	6 keys Yes	8MB	160K Steps	Up-to 6MB	Yes	2

Model	Display	Keys TS	Memory	Ladder Steps	Application memory	Logging	Serial ports
FP4030MT	128X64 Mono Multi color back lit	None Yes	1MB	Yes	Device	No	1 (Extended to 2 ports through Y Cable)
FP5043TN-E	480x272 WQVGA 4.3" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5043T-E	480x272 WQVGA 4.3" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5043TN	480x272 WQVGA 4.3" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5043T	480x272 WQVGA 4.3" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5070TN-E	800x480 WVGA 7" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5070T-E	800x480 WVGA 7" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5070TN	800x480 WVGA 7" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5070T	800x480 WVGA 7" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5121TN	800x600 SVGA 12.1" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2
FP5121T	800x600 SVGA 12.1" Color TFT	None Yes	10MB	Yes	Device and Host	Yes	2

## 2.4 FP Models Specifications

### 2.4.1 FP4020MR-L0808P

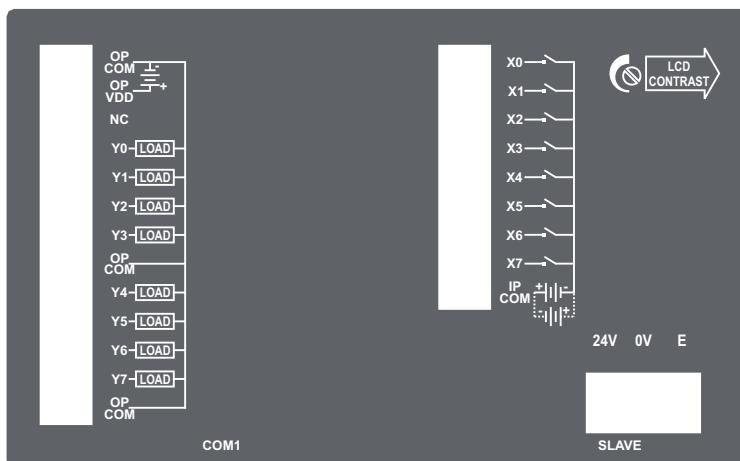


Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	109 H X 71 W X 35 D mm
Power Rating	2 Watt	Weight	215 gm.
Approvals	CE, UL, RoHS	Panel Cutout	99.00 mm x 63.00 mm
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	84 KB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 Points	Emission	EN61000-6-4
Internal Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Input Register	400 Words / 6400 pts max*	<i>*: Depeds upon I/O allocation.</i>	
Output Register	400 Words / 6400 pts max*		
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*		
Display			
Display Type	Multi-color		
Display Resolution	16 X 2 Line Text		
Communication			
Number of Ports	2		
Type	RS232/485/422 and USB Device port		

**Local I/Os specifications for FP4020MR-L0808P**

Digital Inputs	8 Normal inputs Bidirectional type.
Digital outputs	8 PNP type Transistor output.
Rated Input voltage	24VDC
Rated Input Current	Upto 5mA
Input Impedance	4.9K ohm
Minimum ON voltage	15.0 VDC
Maximum OFF voltage	5.0 VDC
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Output Capacity	500mA max for PNP and NPN type transistor output
Rated load	500mA at 24VDC
High Speed Inputs	X1 and X2
No. of inputs	2 Channels
Max. Input Frequency	25 KHz
Max. Input Count	4294967295
High Speed Outputs	Y6 and Y7
No. of inputs	2 Channels
Max. Output Frequency	5 KHz
Max. Output Count	4294967295

**Wiring details are shown on the rear side of the unit FP4020MR-L0808P**



### 2.4.2 FP4020MR-L0808N

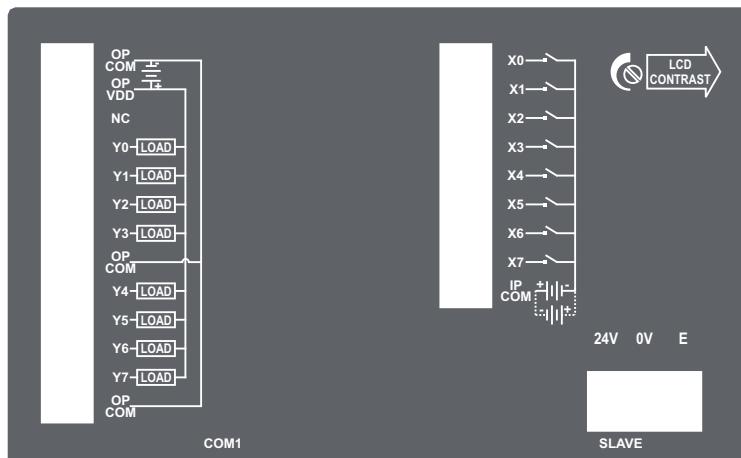


<b>Power Supply</b>	24 VDC	<b>Miscellaneous</b>	
Voltage Rating	24 VDC +/-15%	External Dimension	109 H X 71 W X 35 D mm
Power Rating	2 Watt	Weight	215 gm.
<b>Approvals</b>	CE, UL, RoHS	Panel Cutout	99.00 mm x 63.00 mm
<b>Bezel</b>	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
<b>Memory</b>		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	84 KB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 Points	Emission	EN61000-6-4
Internal Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Input Register	400 Words / 6400 pts max*	<i>*: Depeds upon I/O allocation.</i>	
Output Register	400 Words / 6400 pts max*		
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*		
<b>Display</b>			
Display Type	Multi-color		
Display Resolution	16 X 2 Line Text		
<b>Communication</b>			
Number of Ports	2		
Type	RS232/485/422 and USB Device port		

**Local I/Os specifications for FP4020MR-L0808N**

Digital Inputs	8 Normal inputs Bidirectional type.
Digital outputs	8 NPN type Transistor output.
Rated Input voltage	24VDC
Rated Input Current	Upto 5mA
Input Impedance	4.9K ohm
Minimum ON voltage	15.0 VDC
Maximum OFF voltage	5.0 VDC
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Output Capacity	500mA max for PNP and NPN type transistor output
Rated load	500mA at 24VDC
High Speed Inputs	X1 and X2
No. of inputs	2 Channels
Max. Input Frequency	25 KHz
Max. Input Count	4294967295
High Speed Outputs	Y6 and Y7
No. of inputs	2 Channels
Max. Output Frequency	5 KHz
Max. Output Count	4294967295

**Wiring details are shown on the rear side of the unit FP4020MR-L0808N**



### 2.4.3 FP4020MR-L0808R

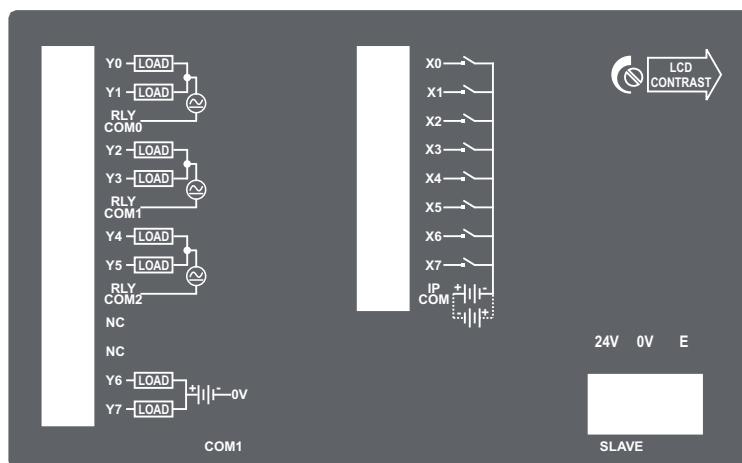


<b>Power Supply</b>	24 VDC	<b>Miscellaneous</b>	
Voltage Rating	24 VDC +/-15%	External Dimension	109 H X 71 W X 35 D mm
Power Rating	2 Watt	Panel Cutout	99.00 mm x 63.00 mm
Approvals	CE, UL, RoHS	Weight	220 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
<b>Memory</b>		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	84 KB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 Points	Emission	EN61000-6-4
Internal Register	256 Words		
Input Register	400 Words / 6400 pts max*	<i>Note: #1 at 25° C</i>	
Output Register	400 Words / 6400 pts max*	<i>#2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*	<i>*: Depeds upon I/O allocation.</i>	
<b>Display</b>			
Display Type	Multi-color		
Display Resolution	16 X 2 Line Text		
<b>Communication</b>			
Number of Ports	2		
Type	RS232/485/422 and USB Device port		

**Local I/Os specifications for FP4020MR-L0808R**

Digital Inputs	8 Normal inputs Bidirectional type.
Digital outputs	6 Relay outputs, 2 PWM / Normal outputs
Rated Input voltage	NA
Rated Input Current	NA
Input Impedance	NA
Minimum ON voltage	NA
Maximum OFF voltage	NA
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Rated load	2A at 24VDC
High Speed Inputs	X1 and X2
No. of inputs	2 Channels
Max. Input Frequency	25 KHz
Max. Input Count	4294967295
High Speed Outputs	Y6 and Y7
No. of inputs	2 Channels
Max. Output Frequency	5 KHz
Max. Output Count	4294967295

**Wiring details are shown on the rear side of the unit FP4020MR-L0808R**

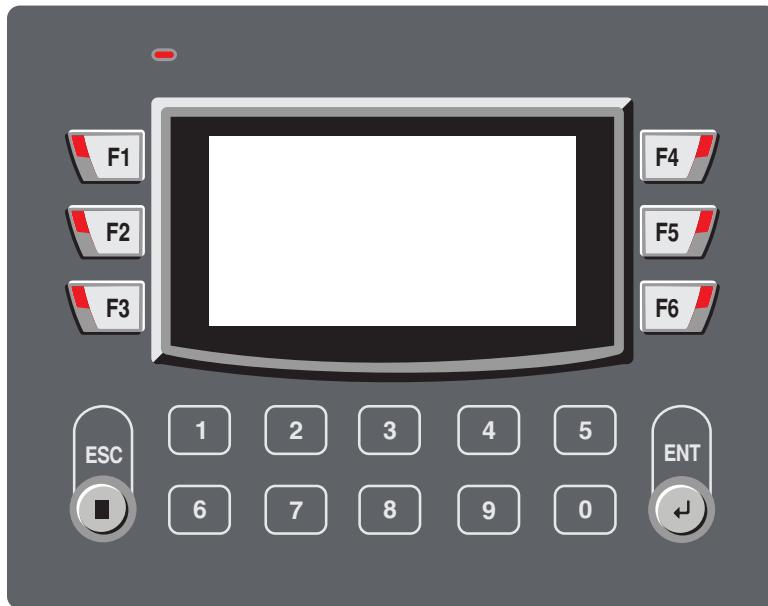


#### 2.4.4 FP4020MR



Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	109 H X 71 W X 35 D mm
Power Rating	2 Watt	Panel Cutout	99.00 mm x 63.00 mm
Approvals	CE, UL, RoHS	Weight	172 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	84 KB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 Points	Emission	EN61000-6-4
Internal Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Input Register	400 Words / 6400 pts max*	<i>*: Depeds upon I/O allocation.</i>	
Output Register	400 Words / 6400 pts max*		
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*		
Display			
Display Type	Multi-color		
Display Resolution	16 X 2 Line Text		
Communication			
Number of Ports	2 with no local IOs		
Type	RS232/485/422 and USB Device port		

### 2.4.6 FP4030MR-L1208R



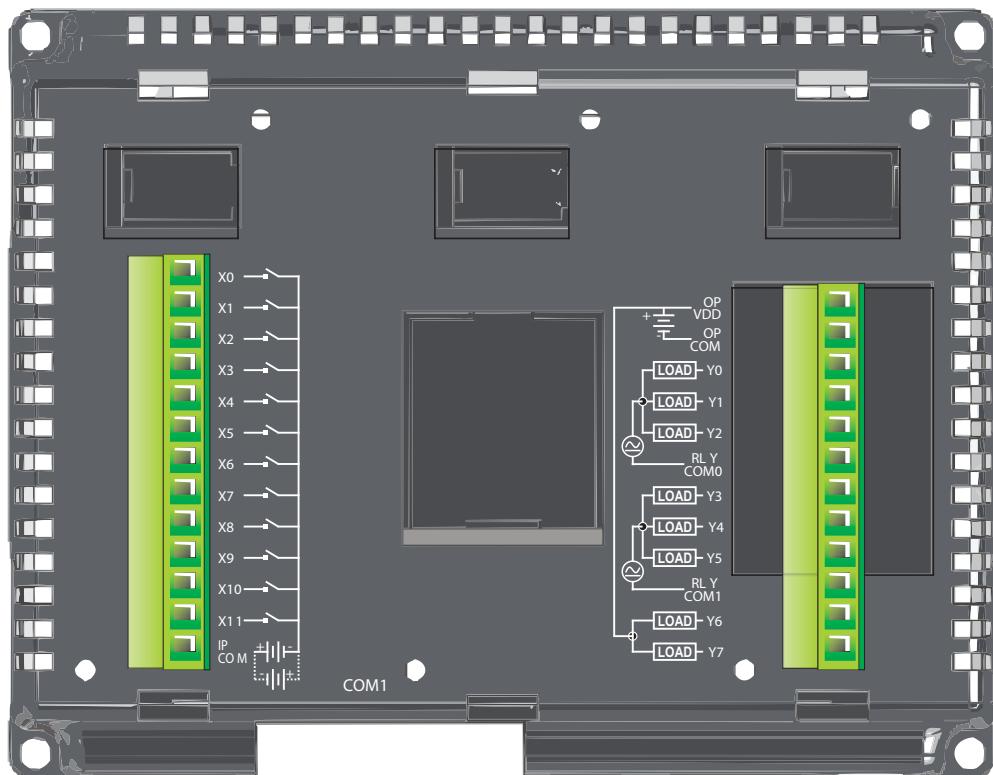
<b>Power Supply</b>	24 VDC	<b>Miscellaneous</b>	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	3 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	320 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
<b>Memory</b>		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	1 MB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN61000-6-4
Internal Register	256 Words		
Input Register	400 Words / 6400 pts max*	<i>Note:</i> #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C	
Output Register	400 Words / 6400 pts max*		
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*		
<b>Display</b>			
Display Type	Multi-color Mono		
Display Resolution	128 X 64 Pixels		
<b>Communication</b>			
Number of Ports	2 with local IOs		
Type	RS232/485/422 and USB Device port		
Expansion Ports	NA		

\*: Depends upon I/O allocation.

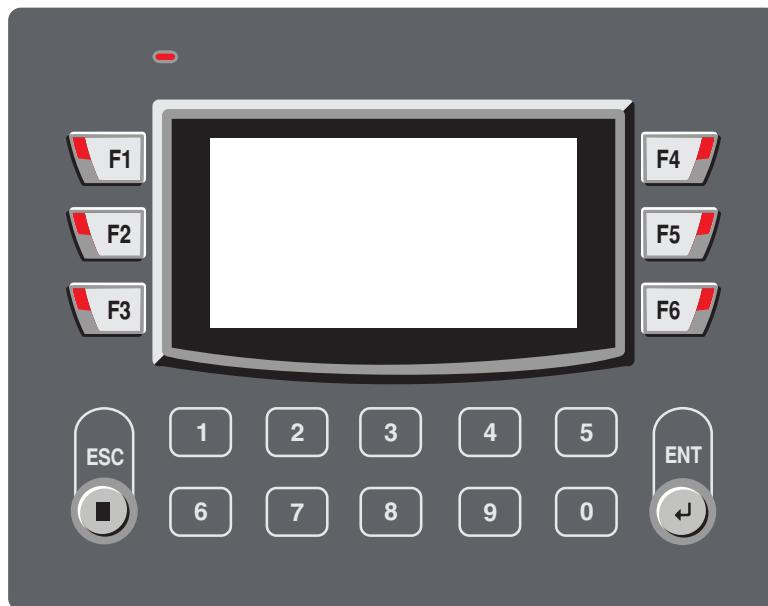
**Local I/Os specifications of FP4030MR-L1208R**

Digital Inputs	12 Normal inputs Bidirectional type.
Digital outputs	6 Relay outputs, 2 PWM / Normal outputs
Rated Input voltage	NA
Rated Input Current	NA
Input Impedance	NA
Minimum ON voltage	NA
Maximum OFF voltage	NA
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Rated load	2A at 24VDC
High Speed Inputs	X1 and X2
No. of inputs	2 Channels
Max. Input Frequency	25 KHz
Max. Input Count	4294967295
High Speed Outputs	Y6 and Y7
No. of inputs	2 Channels
Max. Output Frequency	5 KHz
Max. Output Count	4294967295

Wiring details are shown on the rare side of the unit FP4030MR-L1208R

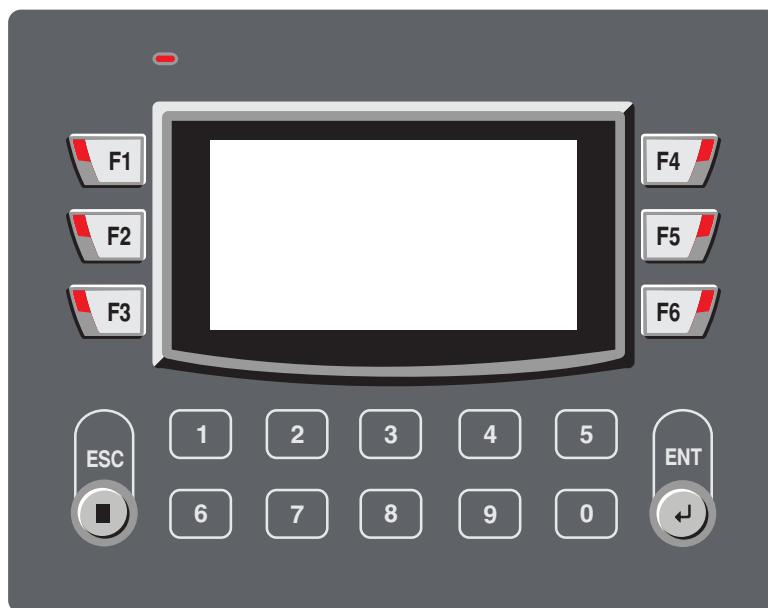


### 2.4.7 FP4030MR-E



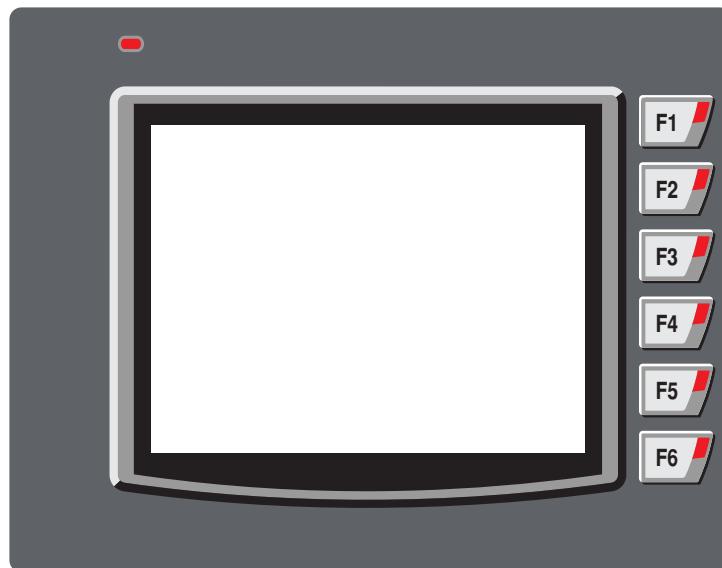
<b>Power Supply</b>	24 VDC	<b>Miscellaneous</b>	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	3 Watt	Panel Cutout	119.00 mm x 93.00 mm
<b>Approvals</b>	CE, UL, RoHS	Weight	265 gm.
<b>Bezel</b>	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
<b>Memory</b>		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	1MB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN61000-6-4
Internal Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Input Register	400 Words / 6400 pts max*	*: Depends upon I/O allocation.	
Output Register	400 Words / 6400 pts max*		
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*		
<b>Display</b>			
Display Type	Multi-color		
Display Resolution	128 X 64 Pixels		
<b>Communication</b>			
Number of Ports	2		
Type	RS232/485/422 and USB Device port		
Expansion Ports	3		

### 2.4.8 FP4030MR



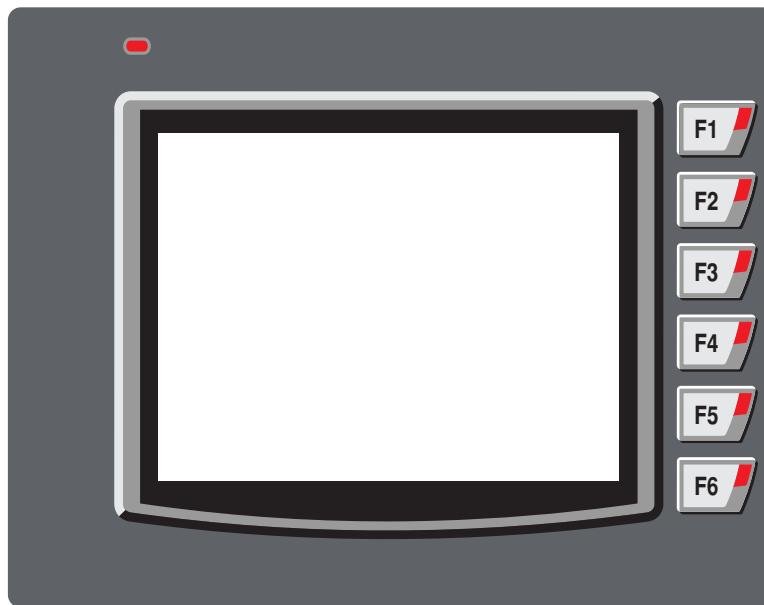
<b>Power Supply</b>	24 VDC	<b>Miscellaneous</b>	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	2 Watt	Panel Cutout	119.00 mm x 93.00 mm
<b>Approvals</b>	CE, UL, RoHS	Weight	255 gm.
<b>Bezel</b>	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
<b>Memory</b>		Mounting Method	Panel Mounting
Ladder Steps	10K Steps	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	1MB	Immunity to ESD	Level as per IEC61000-4-2
Data Register	4096 Words	Immunity to Transients	Level as per IEC61000-4-4
Retentive Register	300 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
System Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN61000-6-4
Internal Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Input Register	400 Words / 6400 pts max*	<i>*: Depends upon I/O allocation.</i>	
Output Register	400 Words / 6400 pts max*		
Timer Register	256 Words		
Counter Register	100 Words		
Configuration Register	1600 Words / 25600 pts max*		
<b>Display</b>			
Display Type	Multi-color		
Display Resolution	128 X 64 Pixels		
<b>Communication</b>			
Number of Ports	2		
Type	RS232/485/422 and USB Device port		
Expansion Ports	NA		

## 2.4.9 FP4035TN-E



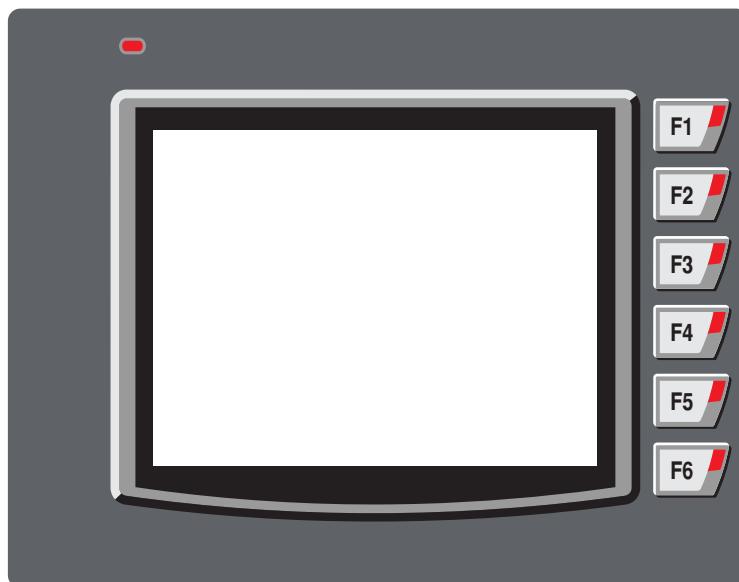
Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	5 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	285 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	8MB	Humidity	10% to 90%# <sup>1</sup> RH (Noncondensing) 10% to 85%# <sup>2</sup> RH (Noncondensing)
Application Memory	6 MB Max.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	160K Steps (1 MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display		<b>Note:</b> #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C	
Display Size & Type	3.5" TFT Color Display		
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		
Communication			
1 COM Port	COM1: RS232/485/422		
2 USB Port	1 USB Device and 1 USB Host		
Ethernet Port	1 Ethernet Port		
Expansion Port	3		

## 2.4.10 FP4035T-E



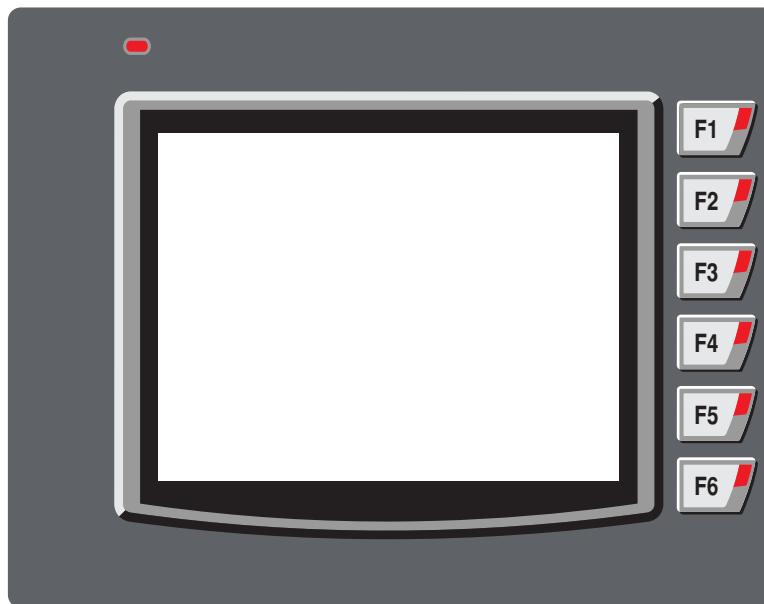
Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	4 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	285 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	8MB	Humidity	10% to 90%#1RH (Noncondensing) 10% to 85%#2RH (Noncondensing)
Application Memory	6 MB Max.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	160K Steps (1 MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Size & Type	3.5'' TFT Color Display	Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C	
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		
Communication			
1 COM Port	COM1: RS232/485/422		
2 USB Port	1 USB Device and 1 USB Host		
Expansion Port	3		

## 2.4.11 FP4035TN



Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	4 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	275 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	8MB	Humidity	10% to 90%#1RH (Noncondensing) 10% to 85%#2RH (Noncondensing)
Application Memory	6 MB Max.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	160K Steps (1 MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Size & Type	3.5" TFT Color Display	Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C	
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		
Communication			
1 COM Port	COM1: RS232/485/422		
2 USB Port	1 USB Device and 1 USB Host		
Ethernet Port	1 Ethernet Port		
Expansion Port	NA		

## 2.4.12 FP4035T



Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	3 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	275 gm.
Bezel	IP65 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	8MB	Humidity	10% to 90% <sup>#1</sup> RH (Noncondensing) 10% to 85% <sup>#2</sup> RH (Noncondensing)
Application Memory	6 MB Max.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	160K Steps (1 MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Size & Type	3.5" TFT Color Display		
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		
Communication			
1 COM Port	COM1: RS232/485/422		
2 USB Port	1 USB Device and 1 USB Host		
Expansion Port	NA		

Note: #1 at 25° C

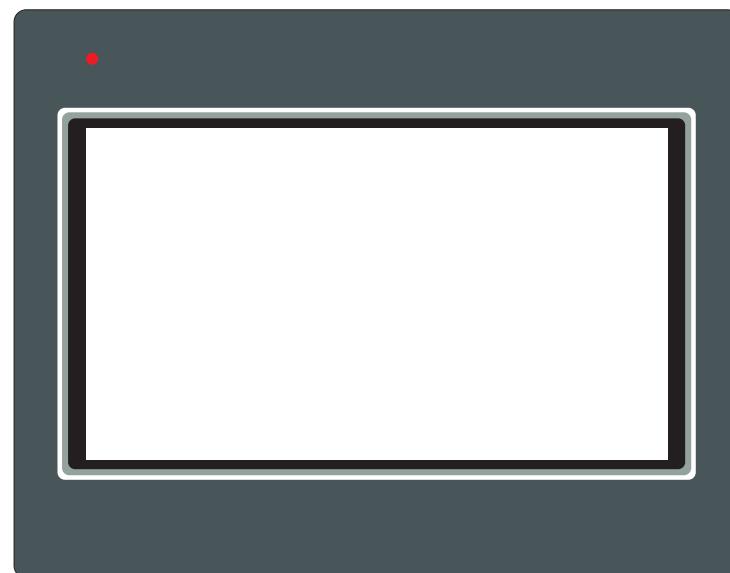
#2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C

## 2.4.13 FP5043TN-E



<b>Power Supply</b>	24 VDC	<b>Miscellaneous</b>	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	6 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	330 gm.
Bezel	IP66 Rated	Ambient Operating Temperature	0 °C to 50 °C
<b>Memory</b>		Mounting Method	Panel Mounting
Total Memory	128MB Max.	Humidity	10% to 90%#1RH (Noncondensing) at 40°C
Application Memory	Up to 10MB Max.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	320K Steps (2MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
<b>Display</b>			
Display Size & Type	4.3" WQVGA TFT Color Display		
Display Resolution	480 X 272 Pixels		
Touch Screen	Analog Resistive		
<b>Communication</b>			
2 COM Port	1: RS232 and 1: RS485/422		Note: *COM1 / COM2: This unit has one DB9 COM port that can be used as COM1 (RS232) and / or COM2 (RS485/RS422). Special Y cable can be provided, if both the ports are to be used simultaneously.
2 USB Port	1 USB Device and 1 USB Host		
Ethernet Port	1 Ethernet Port		
Expansion Port	3		

## 2.4.14 FP5043T-E



Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	6 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	---
Bezel	IP66 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	128MB Max.	Humidity	10% to 90% RH (Noncondensing) at 40°C
Application Memory	Up to 10MB.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	320K Steps (2MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Size & Type	4.3" WQVGA TFT Color Display		
Display Resolution	480 X 272 Pixels		
Touch Screen	Analog Resistive		
Communication			
2 COM Port	1: RS232 and 1: RS485/422		*COM1 / COM2: This unit has one DB9 COM port that can be used as COM1 (RS232) and / or COM2 (RS485/RS422). Special Y cable can be provided, if both the ports are to be used simultaneously.
2 USB Port	1 USB Device and 1 USB Host		
Ethernet Port	None		
Expansion Port	3		

## Note:

\*COM1 / COM2: This unit has one DB9 COM port that can be used as COM1 (RS232) and / or COM2 (RS485/RS422). Special Y cable can be provided, if both the ports are to be used simultaneously.

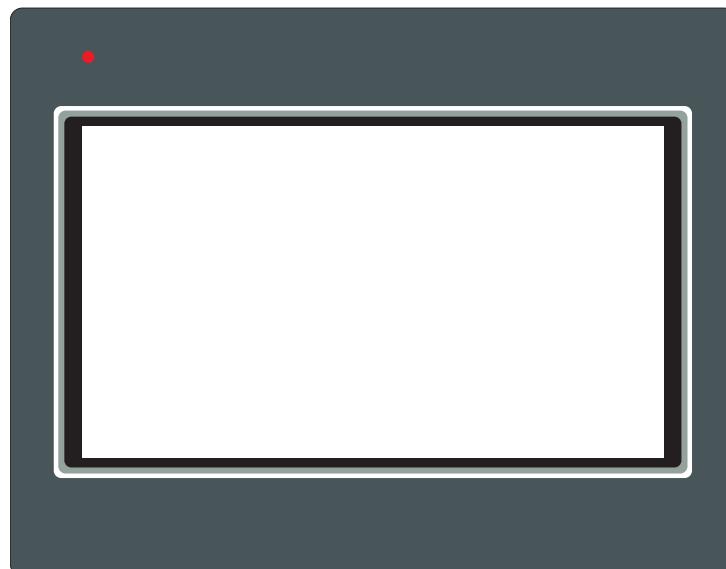
User need to place a separate order to purchase Y cable.  
Refer Appendix section 15.2

## 2.4.15 FP5043TN



Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	5 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	---
Bezel	IP66 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	128MB Max.	Humidity	10% to 90% RH (Noncondensing) at 40°C
Application Memory	Up to 10MB Max.	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	320K Steps (2MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Size & Type	4.3" WQVGA TFT Color Display		
Display Resolution	480 X 272 Pixels		
Touch Screen	Analog Resistive		
Communication			
2 COM Port	1: RS232 and 1: RS485/422		Note: *COM1 / COM2: This unit has one DB9
2 USB Port	1 USB Device and 1 USB Host		COM port that can be used as COM1 (RS232) and / or COM2 (RS485/RS422). Special Y cable can be provided, if both the ports are to be used simultaneously.
Ethernet Port	1 Ethernet port		
Expansion Port	None		

## 2.4.16 FP5043T



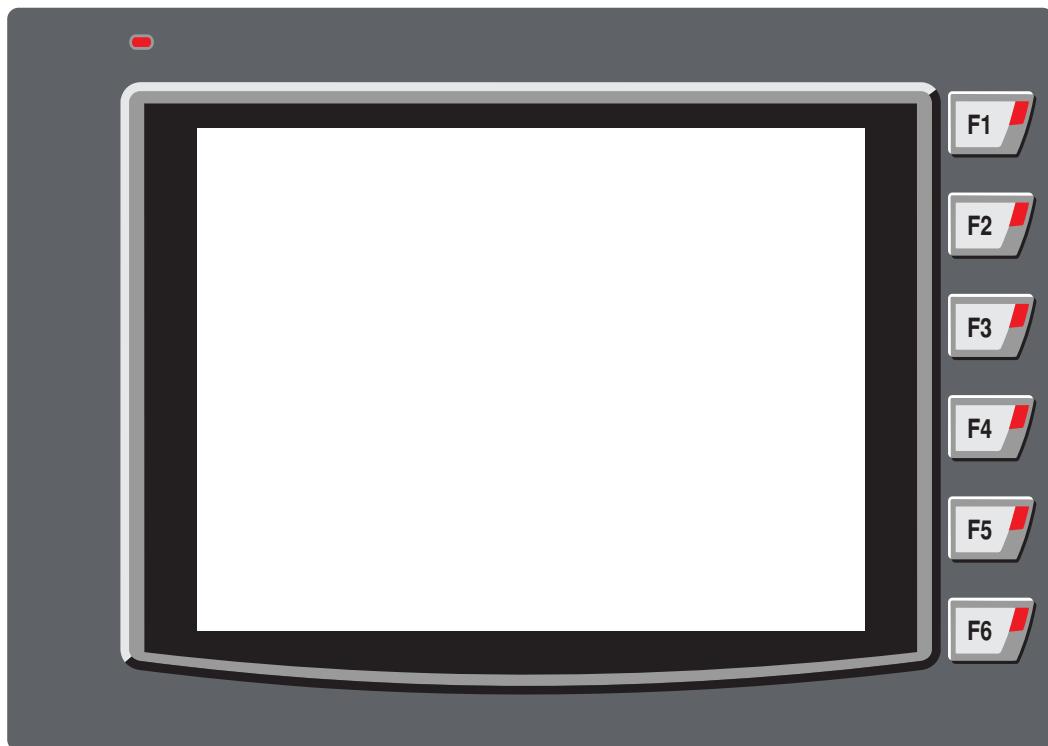
Power Supply	24 VDC	Miscellaneous	
Voltage Rating	24 VDC +/-15%	External Dimension	128 H X 102 W X 45 D mm
Power Rating	5 Watt	Panel Cutout	119.00 mm x 93.00 mm
Approvals	CE, UL, RoHS	Weight	---
Bezel	IP66 Rated	Ambient Operating Temperature	0 °C to 50 °C
Memory		Mounting Method	Panel Mounting
Total Memory	128MB Max.	Humidity	10% to 90% RH (Noncondensing) at 40°C
Application Memory	Up to 10MB	Immunity to ESD	Level as per IEC61000-4-2
Ladder Steps	320K Steps (2MB Max.)	Immunity to Transients	Level as per IEC61000-4-4
Data Register	4096 Words	Immunity to Radiated RF	Level as per IEC61000-4-3
Retentive Register	1400 Words	Immunity to Surge	Level as per IEC61000-4-5
System Register	256 Words	Immunity to CRF	Level as per IEC61000-4-6
System Coil	100 points	Emission	EN55011
Internal Register	256 Words	Vibration Tests	Frequency 10Hz to 150Hz Displacement +/- 0.35mm Acceleration: 2g Sweep rate : 1 octave per minute Duration : 20 Sweeps / Axis app Axis , X,Y, Z
Input Register	400 Words (max.)	Shock Test	25 g acceleration with 11 ms 3 Shocks each <b>AXIS</b> (a total of 18 Shocks)
Output Register	400 Words (max.)		
Timer Register	256 Words		
Counter Register	256 Words		
Configuration Register	1600 Words (max.)		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Size & Type	4.3" WQVGA TFT Color Display		
Display Resolution	480 X 272 Pixels		
Touch Screen	Analog Resistive		
Communication			
2 COM Port	1: RS232 and 1: RS485/422		
2 USB Port	1 USB Device and 1 USB Host		
Ethernet Port	None		
Expansion Port	None		

## Note:

\*COM1 / COM2: This unit has one DB9 COM port that can be used as COM1 (RS232) and / or COM2 (RS485/RS422). Special Y cable can be provided, if both the ports are to be used simultaneously.

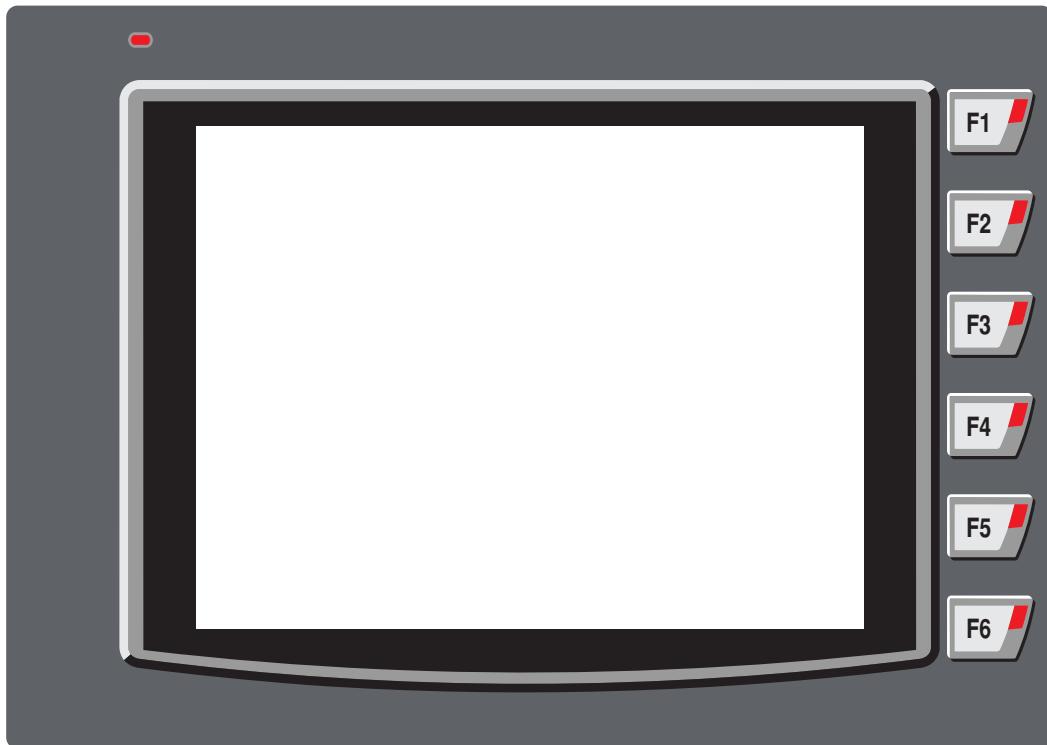
*User need to place a separate order to purchase Y cable.  
Refer Appendix section 15.2*

## 2.4.17 FP4057TN-E



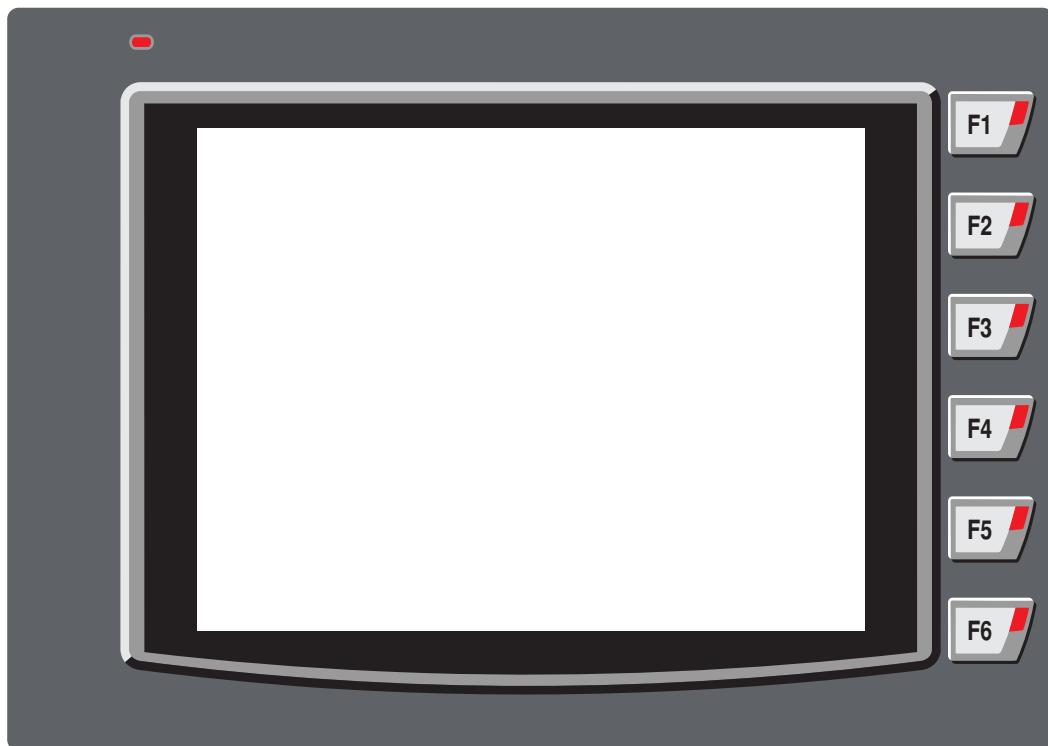
Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	10 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Ethernet Port	1 Ethernet Port
Bezel	IP65 Rated	Expansion Port	5
Memory		Miscellaneous	
Total Memory	160K Steps	External Dimension	195 H X 142 W X 50 D mm
Application Memory	Up to 6 MB	Panel Cutout	184.00 mm x 131.00 mm
Data Register	4096 Words	Weight	710 gm.
Retentive Register	1400 Words	Ambient Operating Temperature	0 °C to 50 °C
System Register	256 Words	Mounting Method	Panel Mounting
System Coil	100 points	Humidity	10% to 90%# <sup>1</sup> RH (Noncondensing) 10% to 85%# <sup>2</sup> RH (Noncondensing)
Internal Register	256 Words	Immunity to ESD	Level as per IEC61000-4-2
Input Register	400 Words (max.)	Immunity to Transients	Level as per IEC61000-4-4
Output Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Timer Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
Counter Register	256 Words	Emission	EN61000-6-4
Configuration Register	1600 Words	Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C	
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	TFT Color Display		
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		

## 2.4.18 FP4057T-E



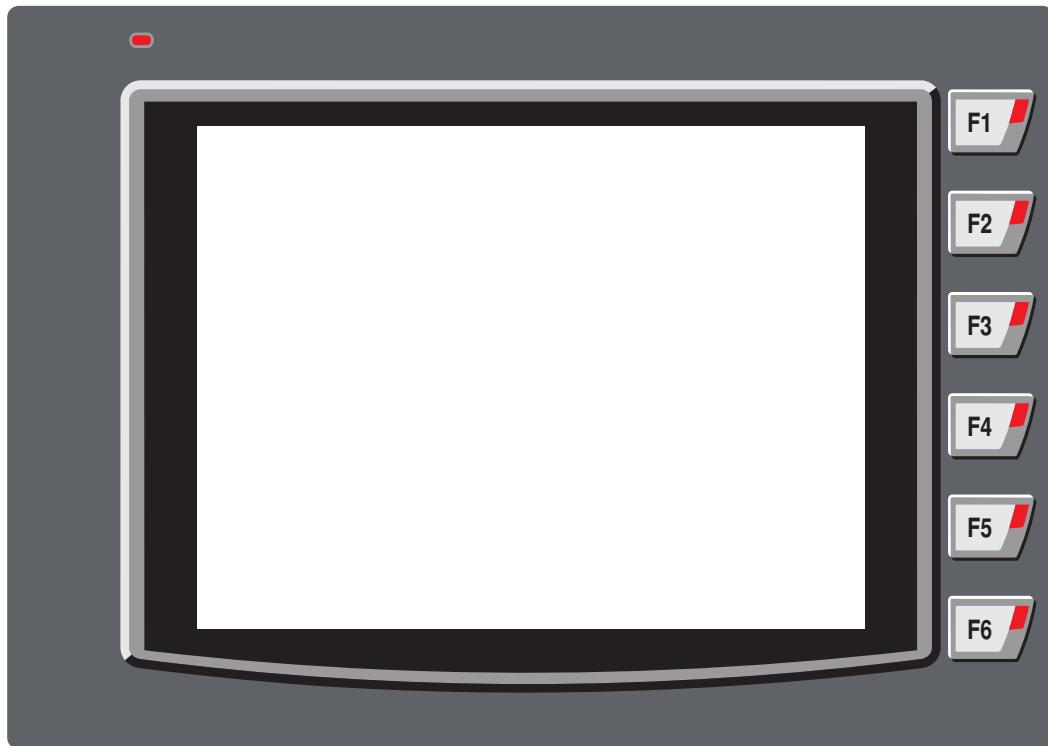
Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	10 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Expansion Port	5
Bezel	IP65 Rated	Miscellaneous	
Memory		External Dimension	195 H X 142 W X 50 D mm
Total Memory	160K Steps	Panel Cutout	184.00 mm x 131.00 mm
Application Memory	Up to 6 MB	Weight	710 gm.
Data Register	4096 Words	Ambient Operating Temperature	0 °C to 50 °C
Retentive Register	1400 Words	Mounting Method	Panel Mounting
System Register	256 Words	Humidity	10% to 90%#1RH (Noncondensing) 10% to 85%#2RH (Noncondensing)
System Coil	100 points	Immunity to ESD	Level as per IEC61000-4-2
Internal Register	256 Words	Immunity to Transients	Level as per IEC61000-4-4
Input Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Output Register	400 Words (max.)	Immunity to CF	Level as per IEC61000-4-6
Timer Register	256 Words	Emission	EN61000-6-4
Counter Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Configuration Register	1600 Words		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	TFT Color Display		
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		

## 2.4.19 FP4057TN



Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	8 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Ethernet Port	1 Ethernet Port
Bezel	IP65 Rated	Expansion Port	NA
Memory		Miscellaneous	
Total Memory	160K Steps	External Dimension	195 H X 142 W X 50 D mm
Application Memory	Up to 6 MB	Panel Cutout	184.00 mm x 131.00 mm
Data Register	4096 Words	Weight	690 gm.
Retentive Register	1400 Words	Ambient Operating Temperature	0 °C to 50 °C
System Register	256 Words	Mounting Method	Panel Mounting
System Coil	100 points	Humidity	10% to 90%#1RH (Noncondensing) 10% to 85%#2RH (Noncondensing)
Internal Register	256 Words	Immunity to ESD	Level as per IEC61000-4-2
Input Register	400 Words (max.)	Immunity to Transients	Level as per IEC61000-4-4
Output Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Timer Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
Counter Register	256 Words	Emission	EN61000-6-4
Configuration Register	1600 Words	Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C	
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	TFT Color Display		
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		

## 2.4.20 FP4057T



Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	7 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Expansion Port	NA
Bezel	IP65 Rated	Miscellaneous	
Memory		External Dimension	195 H X 142 W X 50 D mm
Total Memory	160K Steps	Panel Cutout	184.00 mm x 131.00 mm
Application Memory	Up to 6 MB	Weight	690 gm.
Data Register	4096 Words	Ambient Operating Temperature	0 °C to 50 °C
Retentive Register	1400 Words	Mounting Method	Panel Mounting
System Register	256 Words	Humidity	10% to 90%# <sup>1</sup> RH (Noncondensing) 10% to 85%# <sup>2</sup> RH (Noncondensing)
System Coil	100 points	Immunity to ESD	Level as per IEC61000-4-2
Internal Register	256 Words	Immunity to Transients	Level as per IEC61000-4-4
Input Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Output Register	400 Words (max.)	Immunity to CF	Level as per IEC61000-4-6
Timer Register	256 Words	Emission	EN61000-6-4
Counter Register	256 Words	<i>Note: #1 at 25° C #2 85% at 40° C and above 40° C, the equivalent absolute humidity is less than 85% at 40° C</i>	
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	TFT Color Display		
Display Resolution	320 X 240 Pixels		
Touch Screen	4 wire Analog Resistive		

## 2.4.21 FP5070TN-E



Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	9 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Ethernet Port	1 Ethernet Port
Bezel	IP66 Rated	Expansion Port	5
Memory		Miscellaneous	
Total Memory	128MB Max.	External Dimension	195 H X 142 W X 50 D mm
Application Memory	Up to 10MB	Panel Cutout	184.00 mm x 131.00 mm
Ladder Steps	320K Steps (2MB Max.)	Weight	---
Data Register	4096 Words	Ambient Operating Temperature	0 °C to 50 °C
Retentive Register	1400 Words	Mounting Method	Panel Mounting
System Register	256 Words	Humidity	10% to 90% RH (Noncondensing) at 40°C
System Coil	100 points	Immunity to ESD	Level as per IEC61000-4-2
Internal Register	256 Words	Immunity to Transients	Level as per IEC61000-4-4
Input Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Output Register	400 Words (max.)	Immunity to CF	Level as per IEC61000-4-6
Timer Register	256 Words	Emission	EN61000-6-4
Counter Register	256 Words		
Configuration Register	1600 Words		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	7" WVGA TFT Color Display		
Display Resolution	800 X 480 Pixels		
Touch Screen	Analog Resistive		

## 2.4.22 FP5070T-E



Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	9 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Ethernet Port	None
Bezel	IP66 Rated	Expansion Port	5
Memory		Miscellaneous	
Total Memory	128MB Max.	External Dimension	195 H X 142 W X 50 D mm
Application Memory	Up to 10MB	Panel Cutout	184.00 mm x 131.00 mm
Ladder Steps	320K Steps (2MB Max.)	Weight	---
Data Register	4096 Words	Ambient Operating Temperature	0 °C to 50 °C
Retentive Register	1400 Words	Mounting Method	Panel Mounting
System Register	256 Words	Humidity	10% to 90% RH (Noncondensing) at 40°C
System Coil	100 points	Immunity to ESD	Level as per IEC61000-4-2
Internal Register	256 Words	Immunity to Transients	Level as per IEC61000-4-4
Input Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Output Register	400 Words (max.)	Immunity to CF	Level as per IEC61000-4-6
Timer Register	256 Words	Emission	EN61000-6-4
Counter Register	256 Words		
Configuration Register	1600 Words		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	7" WVGA TFT Color Display		
Display Resolution	800 X 480 Pixels		
Touch Screen	Analog Resistive		

## 2.4.23 FP5070TN



Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	9 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Ethernet Port	1 Ethernet Port
Bezel	IP66 Rated	Expansion Port	None
Memory		Miscellaneous	
Total Memory	128MB Max.	External Dimension	195 H X 142 W X 50 D mm
Application Memory	Up to 10MB	Panel Cutout	184.00 mm x 131.00 mm
Ladder Steps	320K Steps (2MB Max.)	Weight	642 gm.
Data Register	4096 Words	Ambient Operating Temperature	0 °C to 50 °C
Retentive Register	1400 Words	Mounting Method	Panel Mounting
System Register	256 Words	Humidity	10% to 90% RH (Noncondensing) at 40°C
System Coil	100 points	Immunity to ESD	Level as per IEC61000-4-2
Internal Register	256 Words	Immunity to Transients	Level as per IEC61000-4-4
Input Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Output Register	400 Words (max.)	Immunity to CF	Level as per IEC61000-4-6
Timer Register	256 Words	Emission	EN61000-6-4
Counter Register	256 Words		
Configuration Register	1600 Words		
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	7" WVGA TFT Color Display		
Display Resolution	800 X 480 Pixels		
Touch Screen	Analog Resistive		

## 2.4.24 FP5070T



	Communication	
Power Supply	24 VDC	
Voltage Rating	24 VDC +/-15%	2 COM Ports COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	9 Watt	2 USB Ports 1 USB Device and 1 USB Host
Approvals	CE, UL, RoHS	Ethernet Port None
Bezel	IP66 Rated	Expansion Port None
Memory		Miscellaneous
Total Memory	128MB Max.	External Dimension 195 H X 142 W X 50 D mm
Application Memory	Up to 10MB	Panel Cutout 184.00 mm x 131.00 mm
Ladder Steps	320K (2MB Max.)	Weight ---
Data Register	4096 Words	Ambient Operating Temperature 0 °C to 50 °C
Retentive Register	1400 Words	Mounting Method Panel Mounting
System Register	256 Words	Humidity 10% to 90% RH (Noncondensing) at 40°C
System Coil	100 points	Immunity to ESD Level as per IEC61000-4-2
Internal Register	256 Words	Immunity to Transients Level as per IEC61000-4-4
Input Register	400 Words (max.)	Immunity to Radiated RF Level as per IEC61000-4-3
Output Register	400 Words (max.)	Immunity to CF Level as per IEC61000-4-6
Timer Register	256 Words	Emission EN61000-6-4
Counter Register	256 Words	
Configuration Register	1600 Words	
Time Coils	256 points	
Counter Coils	256 points	
Display		
Display Type	7" WVGA TFT Color Display	
Display Resolution	800 X 480 Pixels	
Touch Screen	Analog Resistive	

## 2.4.25 FP5121TN



<b>Power Supply</b>	24 VDC	<b>Communication</b>	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	16 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, RoHS	Ethernet Port	1 Ethernet Port
Bezel	IP66 Rated	Expansion Port	None
<b>Memory</b>		<b>Miscellaneous</b>	
Total Memory	128MB Max.	External Dimension	312 H X 246 W X 48 D mm
Application Memory	Up to 10MB	Panel Cutout	295.00 mm x 227.00 mm
Data Register	4096 Words	Weight	1680 gm.
Retentive Register	1400 Words	Ambient Operating Temperature	0 °C to 50 °C
System Register	256 Words	Mounting Method	Panel Mounting
System Coil	100 points	Humidity	10% to 85% RH (Noncondensing)
Internal Register	256 Words	Immunity to ESD	Level as per IEC61000-4-2
Input Register	400 Words (max.)	Immunity to Transients	Level as per IEC61000-4-4
Output Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Timer Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
Counter Register	256 Words	Emission	EN61000-6-4
Configuration Register	1600 Words	Note: #1: Temp < 40°C, 85% RH Max. Temp > 40°C, absolute humidity shall be less than 85% RH.	
<b>Display</b>			
Display Type	12.1" SVGA TFT Color Display		
Display Resolution	800 X 600 Pixels		
Touch Screen	Analog Resistive		

## 2.4.26 FP5121T

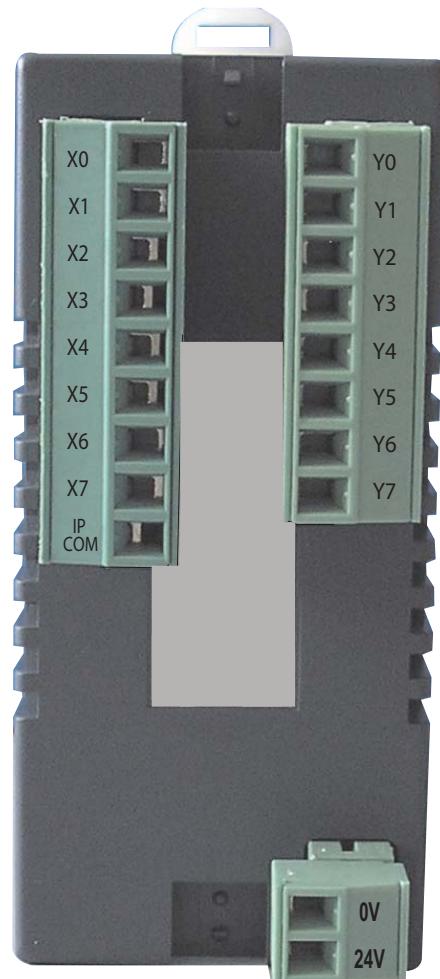


Power Supply	24 VDC	Communication	
Voltage Rating	24 VDC +/-15%	2 COM Ports	COM1: RS232/485/422 COM2: RS232/485/422
Power Rating	16 Watt	2 USB Ports	1 USB Device and 1 USB Host
Approvals	CE, RoHS	Ethernet Port	None
Bezel	IP66 Rated	Expansion Port	None
Memory		Miscellaneous	
Total Memory	128MB Max.	External Dimension	312 H X 246 W X 48 D mm
Application Memory	Up to 10MB	Panel Cutout	295.00 mm x 227.00 mm
Data Register	4096 Words	Weight	1680 gm.
Retentive Register	1400 Words	Ambient Operating Temperature	0 °C to 50 °C
System Register	256 Words	Mounting Method	Panel Mounting
System Coil	100 points	Humidity	10% to 85% RH (Noncondensing)
Internal Register	256 Words	Immunity to ESD	Level as per IEC61000-4-2
Input Register	400 Words (max.)	Immunity to Transients	Level as per IEC61000-4-4
Output Register	400 Words (max.)	Immunity to Radiated RF	Level as per IEC61000-4-3
Timer Register	256 Words	Immunity to CF	Level as per IEC61000-4-6
Counter Register	256 Words	Emission	EN61000-6-4
Configuration Register	1600 Words	Note: #1: Temp < 40°C, 85% RH Max. Temp > 40°C, absolute humidity shall be less than 85% RH.	
Time Coils	256 points		
Counter Coils	256 points		
Display			
Display Type	12" SVGA TFT Color Display		
Display Resolution	800 X 600 Pixels		
Touch Screen	Analog Resistive		

## 2.5 FP Expansion Models

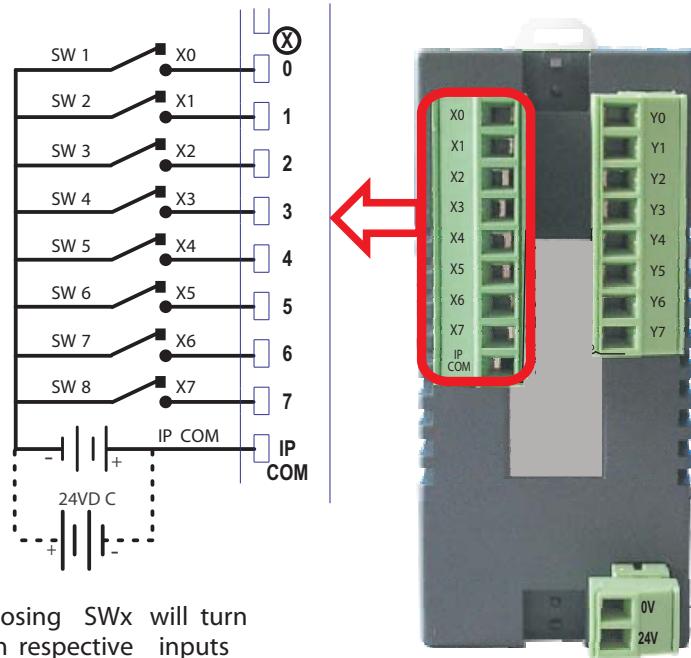
### 2.5.1 FPED0808P (PNP Type transistor output) FPED0808N (NPN Type transistor output)

Power	3.9VDC, 0.3W from FP base model
Approvals	CE, UL
Digital Inputs	8 Normal inputs Bidirectional type.
Digital outputs	8 PNP type Transistor output. 8 NPN type Transistor output.
Rated Input voltage	24VDC
Rated Input Current	Upto 5mA
Input Impedance	4.9K ohm
Minimum ON voltage	18.0 VDC
Maximum OFF voltage	5.0 VDC
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Output Capacity	500mA max for PNP and NPN type transistor output
Rated load	500mA at 24VDC
High Speed Channels	X0 and X5
No. of inputs	2 Channels
Max. Input Frequency	25 KHz
Max. Input Count	4294967295
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	70 gm.

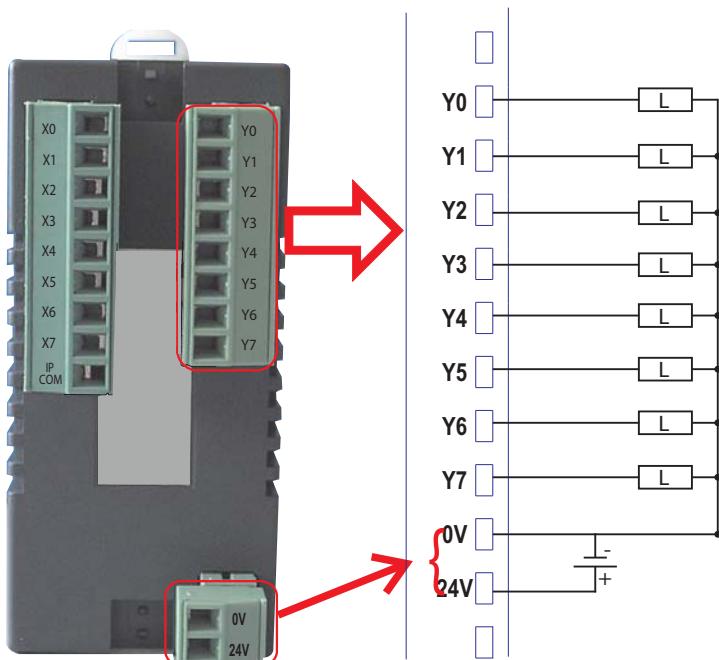


Wiring diagram of FPED0808P (PNP Type transistor output):

1. Wiring diagram for testing digital inputs:

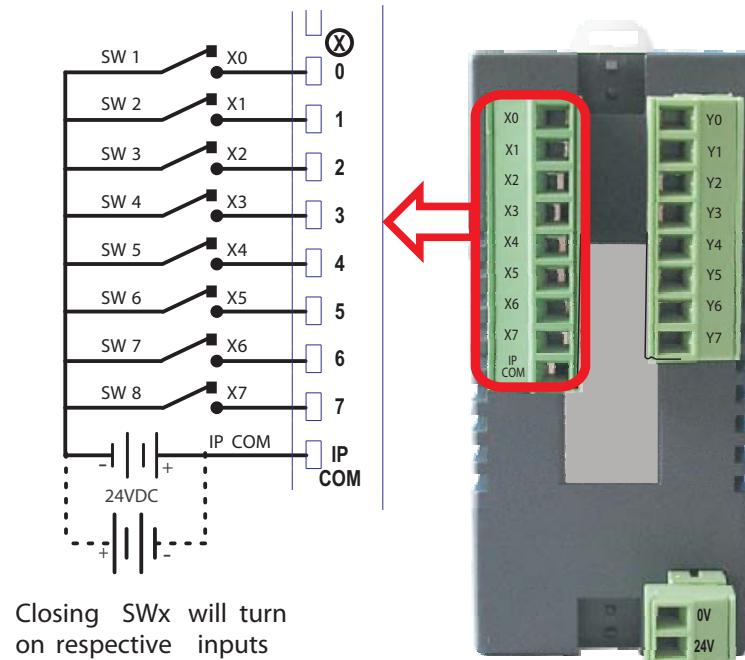


2. Expansion output connections:

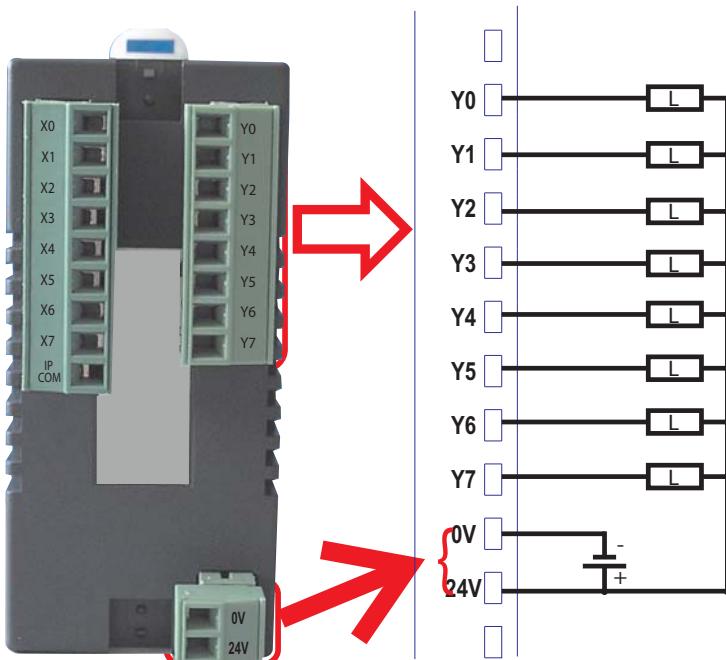


Wiring diagram of FPED0808N (NPN Type transistor output):

1. Wiring diagram for testing digital inputs:

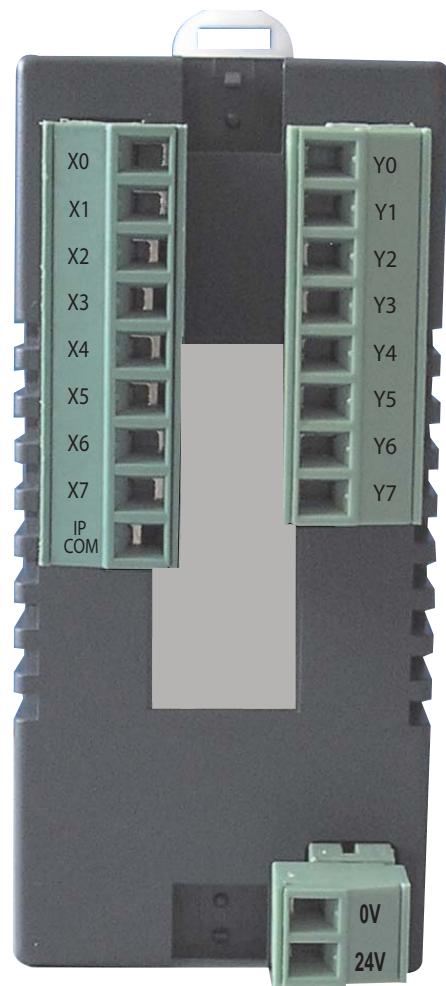


2. Expansion output connections:



## 2.5.2 FPED-HS-0808N (NPN Type transistor output) FPED-HS-0808P (PNP Type transistor output)

<b>DC Digital Inputs</b>	
Number of Inputs	8 Inputs Bi-directional Type (Within which 4 are high speed)
Input Design	According to EN 61131-2 Type 1
Minimum ON Voltage	15 VDC
Maximum ON Voltage	30 VDC
Maximum OFF Voltage	5 VDC
Minimum OFF voltage	-3 VDC
Nominal input voltage	24 VDC
Nominal input current	5mA Typical
Isolation	Optically isolated from internal circuit. High isolation voltage (BV=3750Vr.m.s.)
Input Impedance	4.9K ohm
Turn OFF time	10msec
Turn ON time	10msec
<b>High Speed Inputs</b>	
Number of HS Inputs	4
High Speed Channels	X0, X5, X2, X7
Max. input frequency	25KHz
Max. input count	4294967295
<b>24V DC Digital Outputs PNP / NPN Transistor type</b>	
Number of Outputs	8 PNP / NPN type (Within which 2 are high speed outputs)
Min. ON Output Voltage	22V DC
Max. ON Voltage	24V DC
Max. OFF Voltage	1V
Minimum OFF Voltage	0.2V
Nominal Output voltage	24 V DC
Nominal Output current per channel	500mA Typical [For HS: FPED-HS-0808N: 300mA and FPED-HS-0808P: 250mA]
Isolation	Optically isolated from internal circuit. High isolation voltage(BV=3750Vr.m.s.)
Short Circuit protection	1. Auto Protection for 6 normal digital output PNP / NPN type channels.
Nominal load - Ohmic - Lamp - Inductive	48 Ohm / 12 W 12 W 12 VA (1.2 H, 50 W)
Switching frequency with Inductive nominal load	0.5 Hz (1.2 H, 50 W), maximum
<b>24V DC Auxiliary Power Supply</b>	
Nominal value	24 V DC
Tolerance	-15% / +20% according to EN 61131-2
Ripple	±5% according to EN61131-2
Permissible range	19.2 V to 30 V
Safety equipment	Surge voltage, protection against Reverse polarity
Connection	Via power connectors



High Speed Counter Features		
Up Counter Single Phase	Number of channels	4 ( X0, X5, X2, X7)
	Physical reset input	X1, X6, X3, X4
	Maximum input frequency (per channel)	25KHz
	Input count register (per channel)	1 (32-bit)
	Preset registers (per channel)	1 (32-bit)
	Configurable forced output	4 (Y1, Y6, Y7, Y0)
Quadrature Counter	Number of channels	2 (X0 and X5, X2 and X7)
	Physical reset input channels	X1, X3
	Maximum input frequency (per channel)	Note1*20KHz
	Input count register (per channel)	1 (32-bit)
	Preset registers (per channel)	1 (32-bit)
	Configurable forced output	2 (Y1, Y7)
	Quadrature mode	1x, 2x, 4x
<b>PWM Output</b>		
Number of channels	1 (Y2)	
	PWM frequency (variable)	10KHz Max
	Frequency step	1Hz
	PWM duty cycle (variable)	0 to 100%
Duty cycle step	1%	
	Number of pulse channels	1
	Output Channels used	Y2 (Pulse), Y4 (Direction)
	Pulse frequency	10KHz Max (50% duty cycle)
Pulse/DIR mode	Frequency step	1Hz
	Number of pulse channels	2
	Output Channels used	Y2 (CW), Y4 (CCW)
	Pulse frequency	10KHz Max (50% duty cycle)
CW/CCW mode	Frequency step	1Hz
	Number of pulse channels	2
	Output Channels used	Y2 (always continuous pulse) Y4 (configurable normal or continuous pulse)"
	Pulse frequency (variable)	10KHz Max (50% duty cycle)
Fixed pulse mode (Continuous)	Frequency step	1Hz
	Number of pulse channels	1
	Output Channels used	Y2
	Minimum frequency	1Hz to 10KHz
Fixed pulse mode (Trapezoidal) (Soft start)	Maximum frequency (must be>min. freq.)	1Hz to 10KHz
	Acceleration time	0ms to 32767ms
	Deceleration time	0ms to 32767ms
	Pulse count	0 to 2147483647
	Frequency step	1Hz

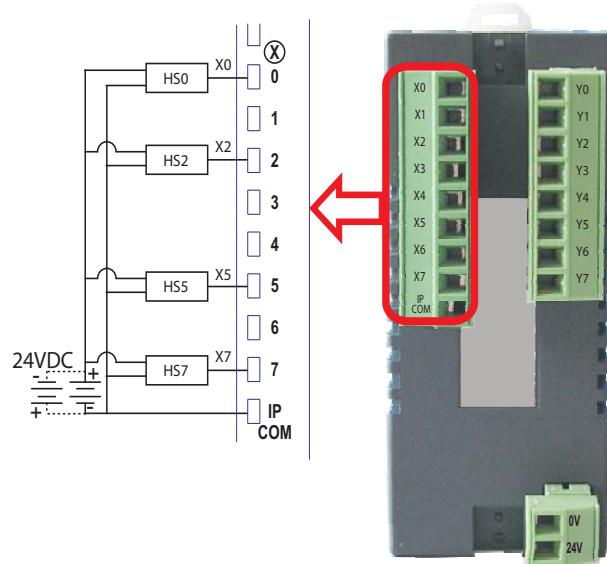
*Note 1\*:*

*In quadrature mode, when both the channels are used simultaneously, then maximum input frequency will be 5 KHz.*

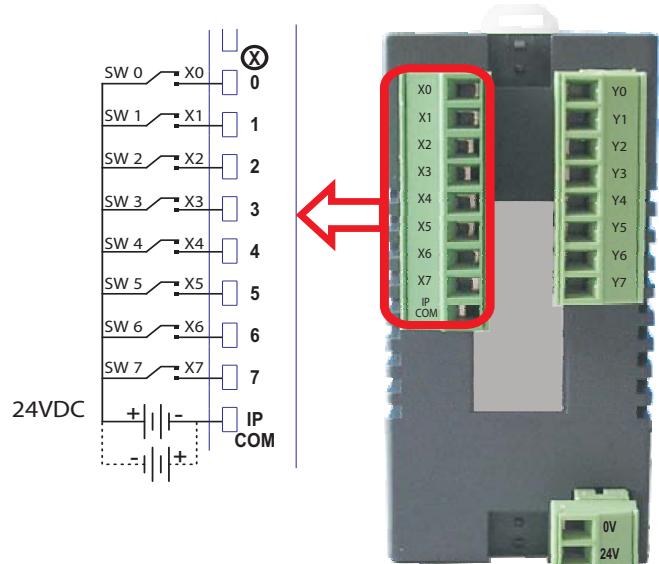
*Also for the frequency to be used above 5KHz (Max. 20KHz) for single pair, then use only pair2 (X2, X7).*

Wiring diagram of FPED-HS-0808N and FPED-HS-0808P:

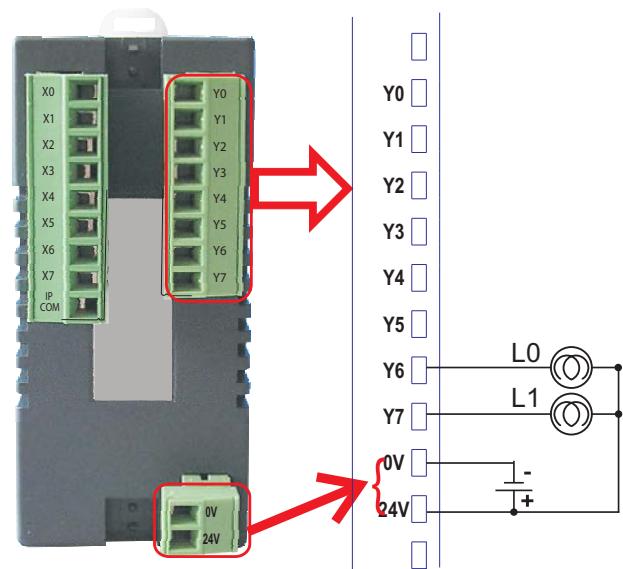
1. High Speed Counter Input Connection :



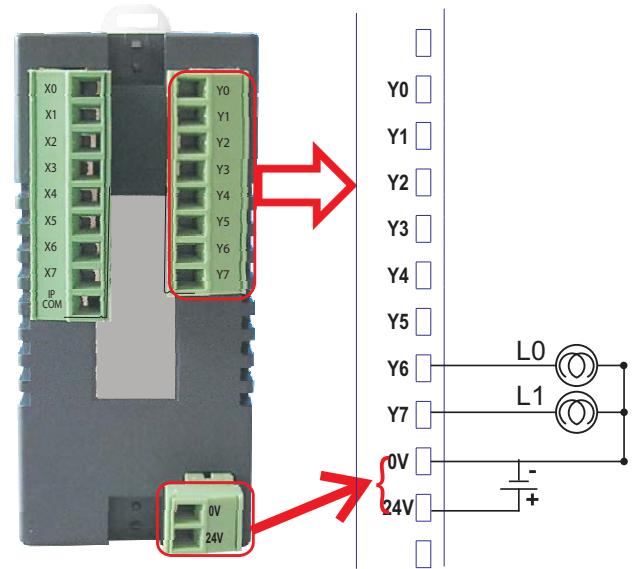
2. Normal Input Connection:



3. PWM Output Connection (Sink):

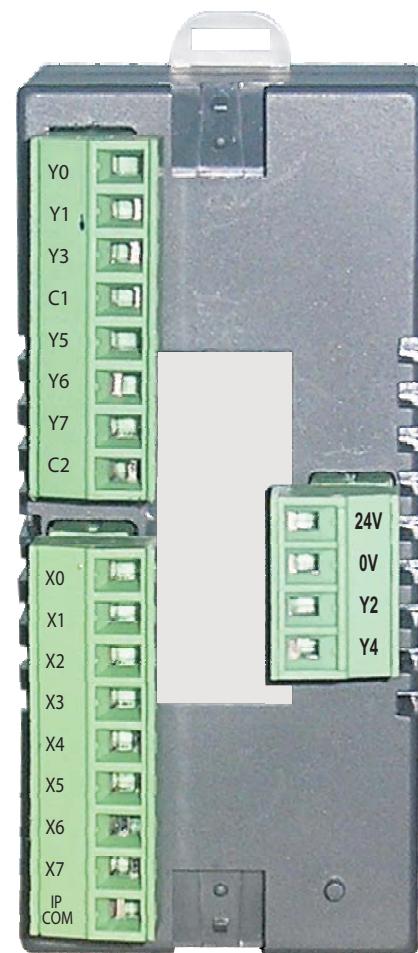


4. PWM Output Connection (Source):



**2.5.3 FPED-HS-0808RN (6 relay type output and 2 NPN Type transistor output)  
FPED-HS-0808RP (6 relay type output and 2 PNP Type transistor output)**

<b>24V DC Digital Inputs</b>	
Number of Inputs	8 Inputs Bi-directional Type (Within which 4 are high speed)
Input Design	According to EN 61131-2 Type 1
Minimum ON Voltage	15 VDC
Maximum ON Voltage	30 VDC
Maximum OFF Voltage	5 VDC
Minimum OFF voltage	-3 VDC
Nominal input voltage	24 VDC
Nominal input current	< 1mA
Isolation	Optically isolated from internal circuit. High isolation voltage(BV = 3KV)
Input Impedance	4.7K ohm
Turn OFF time	10msec
Turn ON time	10msec
<b>High Speed Inputs</b>	
Number of HS Inputs	4
High Speed Channels	X0, X5, X2, X7
Max. input frequency	25KHz
Max. input count	4294967295
<b>Digital Outputs:</b>	
Number of Outputs	8 (within which 6 are relay (Form A) type- 3 points per common & 2 are NPN type outputs)
Isolation	Optically isolated from internal circuit. High isolation voltage (BV = 3750 Vr.m.s.)
Output Capacity	1. 2A per o/p & 6A per common for relay type output 2. 300mA for NPN type output
Rated Load	230VAC/2A ,30VDC/2A(for relay) 300mA@24VDC(for NPN Transistor)
Min. ON Output Voltage	22V DC
Max. ON Voltage	24V DC
Max. OFF Voltage	1V
Min. OFF voltage	0.2V
Nominal Output voltage	24 V DC
<b>Power rating</b>	
Voltage rating	3.9VDC derived from base unit
Current rating	Up to 80mA
Power rating	0.3W
Input per channel	24VDC, 5mA
Output per channel (except high speed)	230V AC /2A , 24VDC/2A for relay type
High Speed output channel	300mA ,24VDC
<b>General</b>	
Operating Temperature	0 to 55°C
Storage Temperature	-20 to 85°C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	Approx. 70 gm.



High Speed Counter Features		
Up Counter Single Phase	Number of channels	4 ( X0, X5, X2, X7)
	Physical reset input	X1, X6, X3, X4
	Maximum input frequency (per channel)	25KHz
	Input count register (per channel)	1 (32-bit)
	Preset registers (per channel)	1 (32-bit)
	Configurable forced output	4 (Y1, Y6, Y7, Y0)
Quadrature Counter	Number of channels	2 (X0 and X5, X2 and X7)
	Physical reset input channels	X1, X3
	Maximum input frequency (per channel)	Note <sup>1*</sup> 20KHz
	Input count register (per channel)	1 (32-bit)
	Preset registers (per channel)	1 (32-bit)
	Configurable forced output	2 (Y1, Y7)
		Quadrature mode 1x, 2x, 4x
PWM Output		
Number of channels	1 (Y2)	
	10KHz Max	
	1Hz	
	0 to 100%	
Duty cycle step	1%	
Pulse/DIR mode	Number of pulse channels	1
	Output Channels used	Y2 (Pulse), Y4 (Direction)
	Pulse frequency	10KHz Max (50% duty cycle)
	Frequency step	1Hz
CW/CCW mode	Number of pulse channels	2
	Output Channels used	Y2 (CW), Y4 (CCW)
	Pulse frequency	10KHz Max (50% duty cycle)
	Frequency step	1Hz
Fixed pulse mode (Continuous)	Number of pulse channels	1
	Output Channels used	Y2 (always continuous pulse)
	Pulse frequency (variable)	10KHz Max (50% duty cycle)
	Frequency step	1Hz
Fixed pulse mode (Trapezoidal) (Soft start)	Number of pulse channels	1
	Output Channels used	Y2
	Minimum frequency	1Hz to 10KHz
	Maximum frequency (must be>min. freq.)	1Hz to 10KHz
	Acceleration time	0ms to 32767ms
	Deceleration time	0ms to 32767ms
	Pulse count	0 to 2147483647
	Frequency step	1Hz

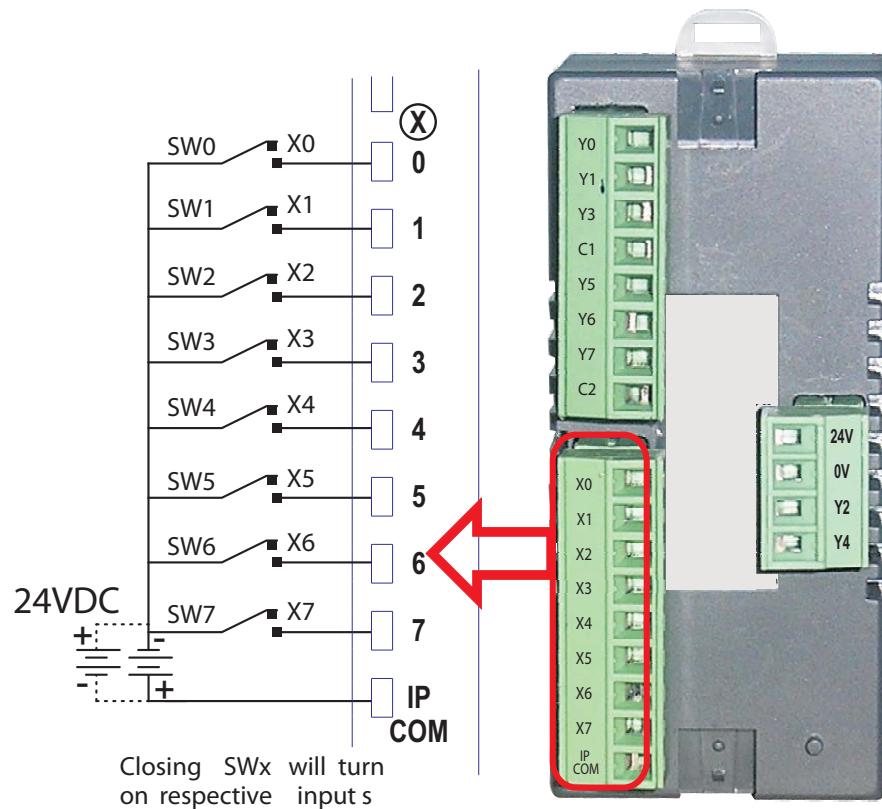
Note <sup>1\*</sup>:

In quadrature mode, when both the channels are used simultaneously, then maximum input frequency will be 5 KHz.

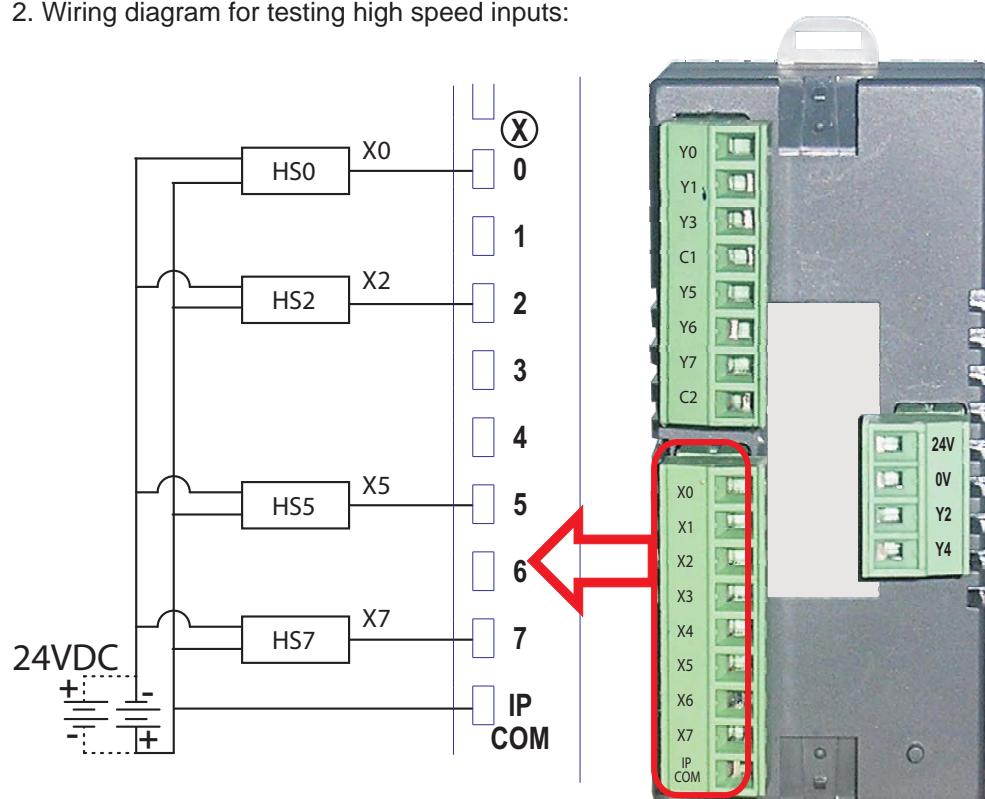
Also for the frequency to be used above 5KHz (Max. 20KHz) for single pair, then use only pair2 (X2, X7).

## Wiring Diagram for FPED-HS-0808RN and FPED-HS-0808RP:

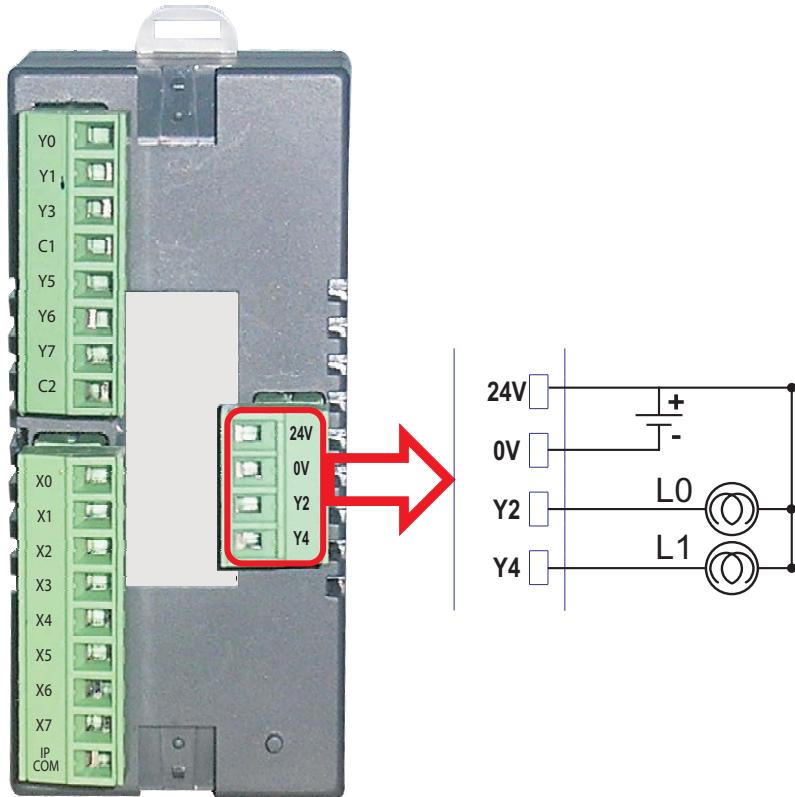
## 1. Wiring diagram for testing normal inputs:



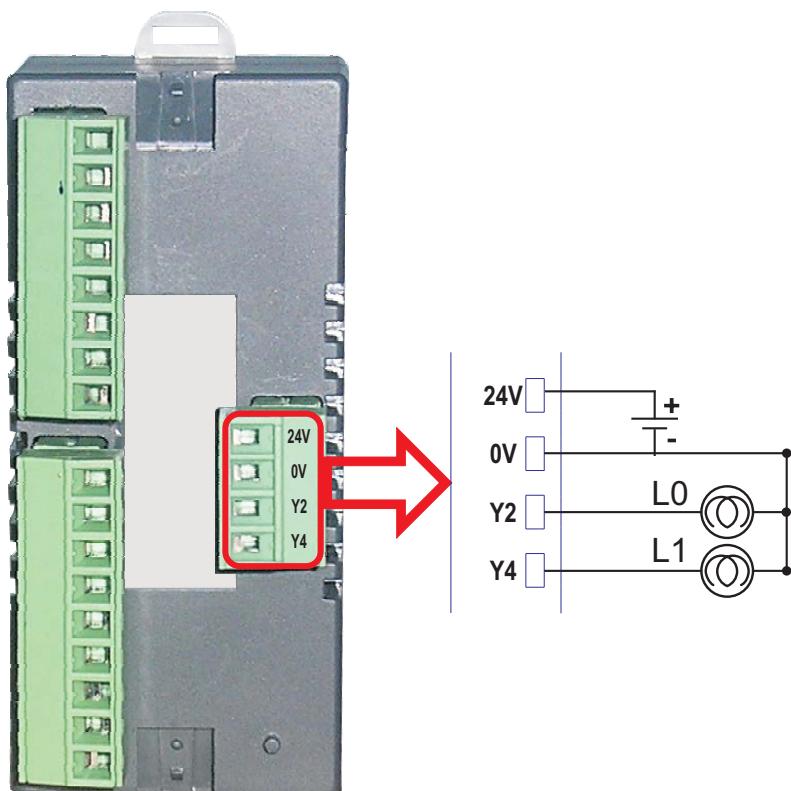
## 2. Wiring diagram for testing high speed inputs:



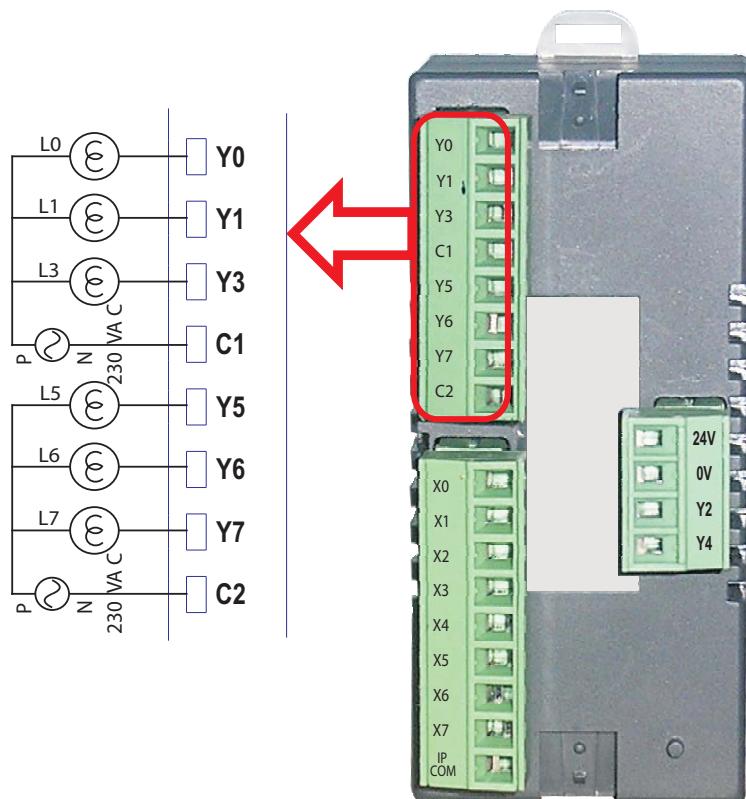
3. PWM output connection (Sink):



4. PWM output connection (Source):



## 5. Wiring diagram for relay type output:

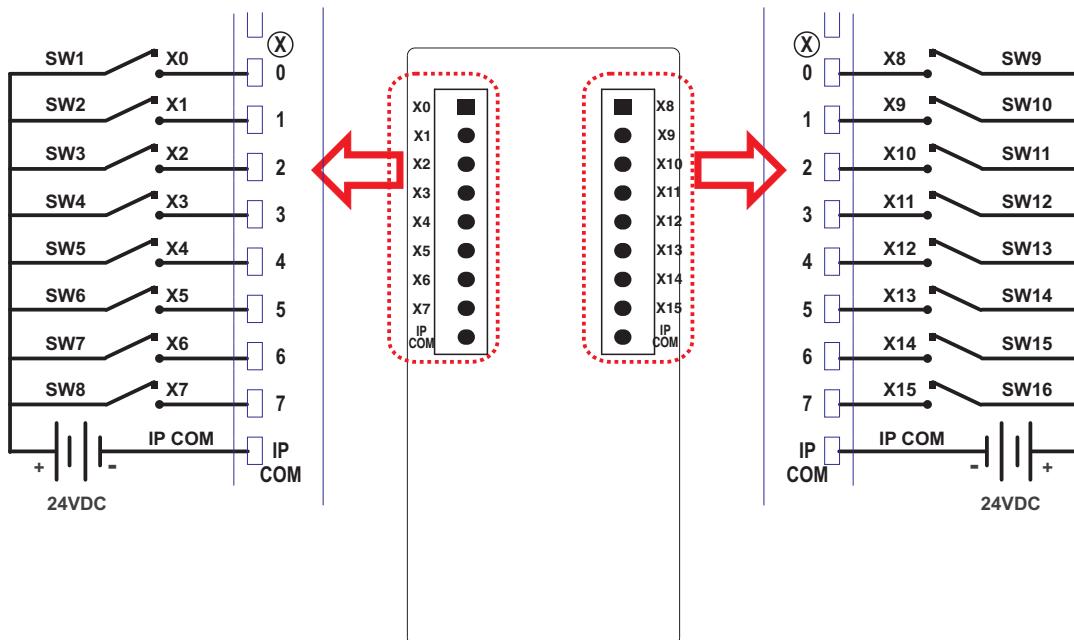


## 2.5.4 FPED1600 (16 channel bidirectional inputs only)

Power	3.9VDC, 0.3W from FP base model
Approvals	CE, UL
Digital Inputs	14 Normal inputs (Bidirectional type) 2 High speed inputs
Digital outputs	N.A.
Rated Input voltage	24VDC
Rated Input Current	Upto 5mA
Input Impedance	4.9K ohm
Minimum ON voltage	15.0 VDC
Maximum OFF voltage	5.0 VDC
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Output Capacity	N.A.
Rated load	N.A.
High Speed Channels	
No. of inputs	2 Channels (X0 and X5)
Max. Input Frequency	25 KHz
Max. Input Count	4294967295
No. of outputs	N.A.
Max. Output Frequency	N.A.
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	65 gm.

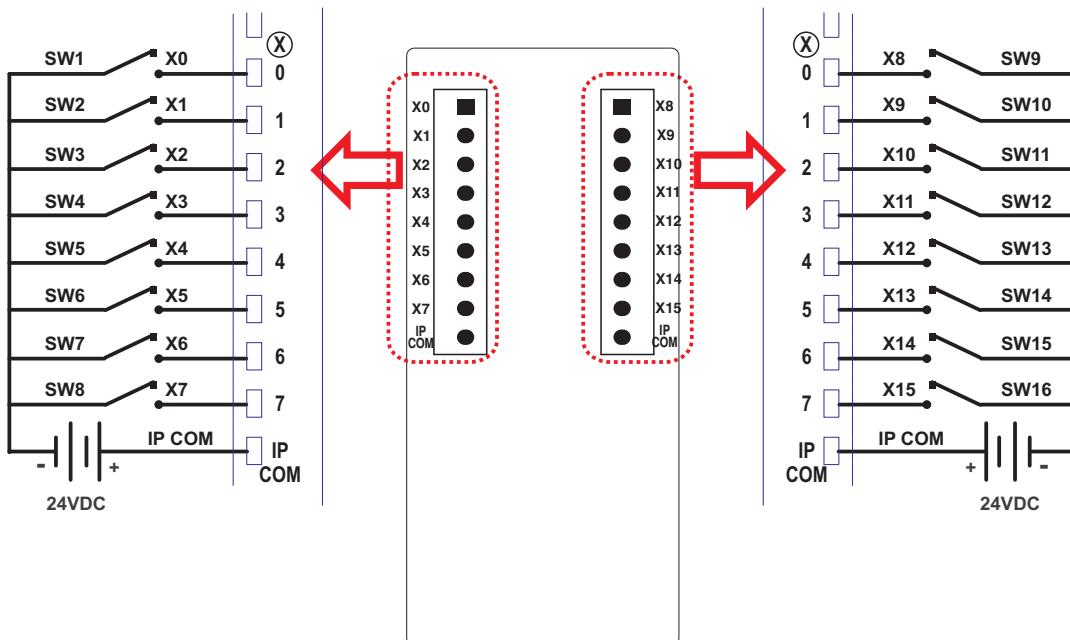
Wiring Diagram of FPED1600 (16 channel bidirectional inputs only)

1. Wiring diagram for testing digital inputs (NPN Type):



**Closing Swx will turn on respective inputs**

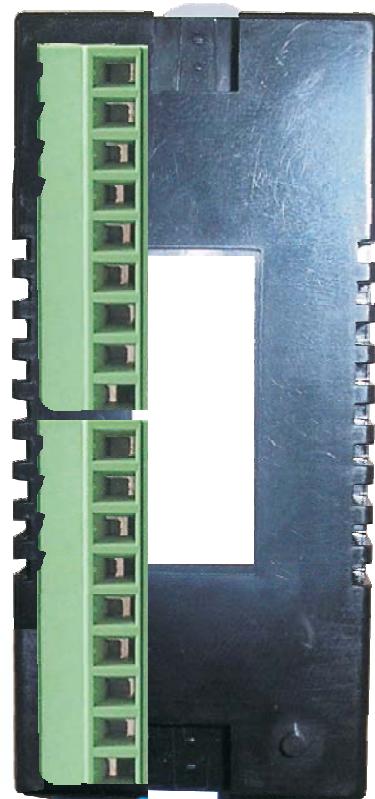
2. Wiring diagram for testing digital inputs (PNP Type):



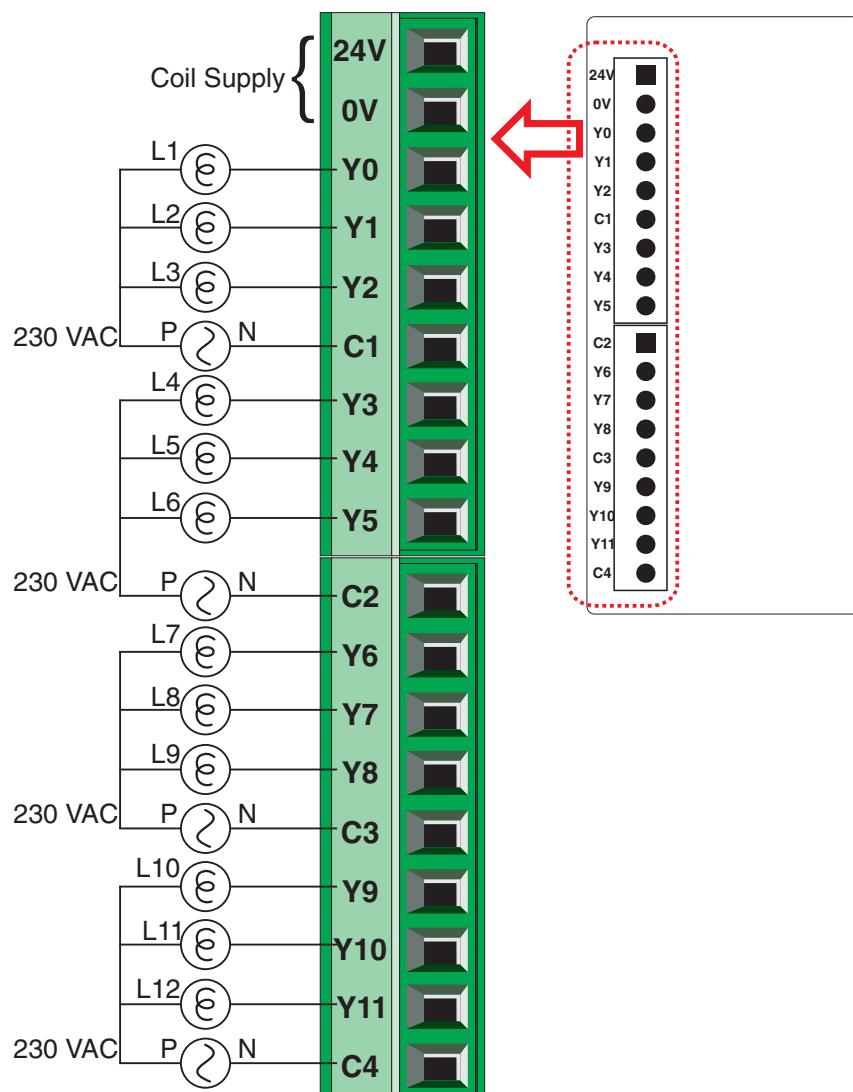
**Closing Swx will turn on respective inputs**

### 2.5.5 FPED0012R (12 channel outputs only)

Power	3.9VDC, 0.3W from FP base model
Approvals	CE, UL
Digital Inputs	N.A
Digital outputs	12 Relay type outputs
Rated Input voltage	N.A.
Rated Input Current	N.A.
Input Impedance	N.A.
Minimum ON voltage	N.A.
Maximum OFF voltage	
Turn ON time	10 msec
Turn OFF time	5 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Output Capacity	
Rated load	
Contact Rating	2A per contact
High Speed Channels	N.A.
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	90 gm.



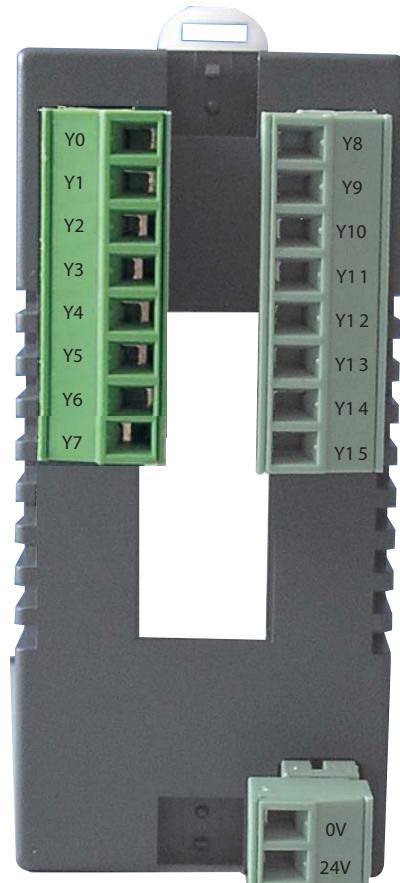
## Wiring Diagram of FPED0012R



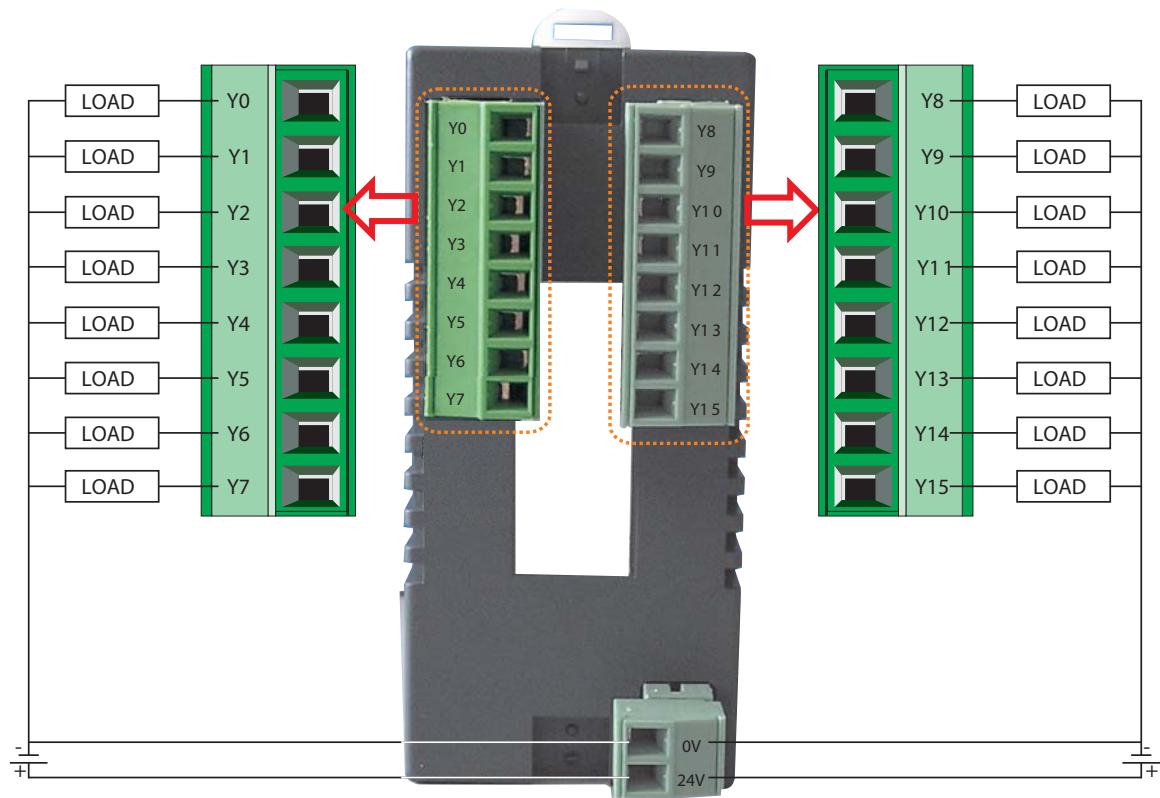
\*L1 to L12 are A.C. Load.

### 2.5.6 FPED0016P (PNP Type transistor output) FPED0016N (NPN Type transistor output)

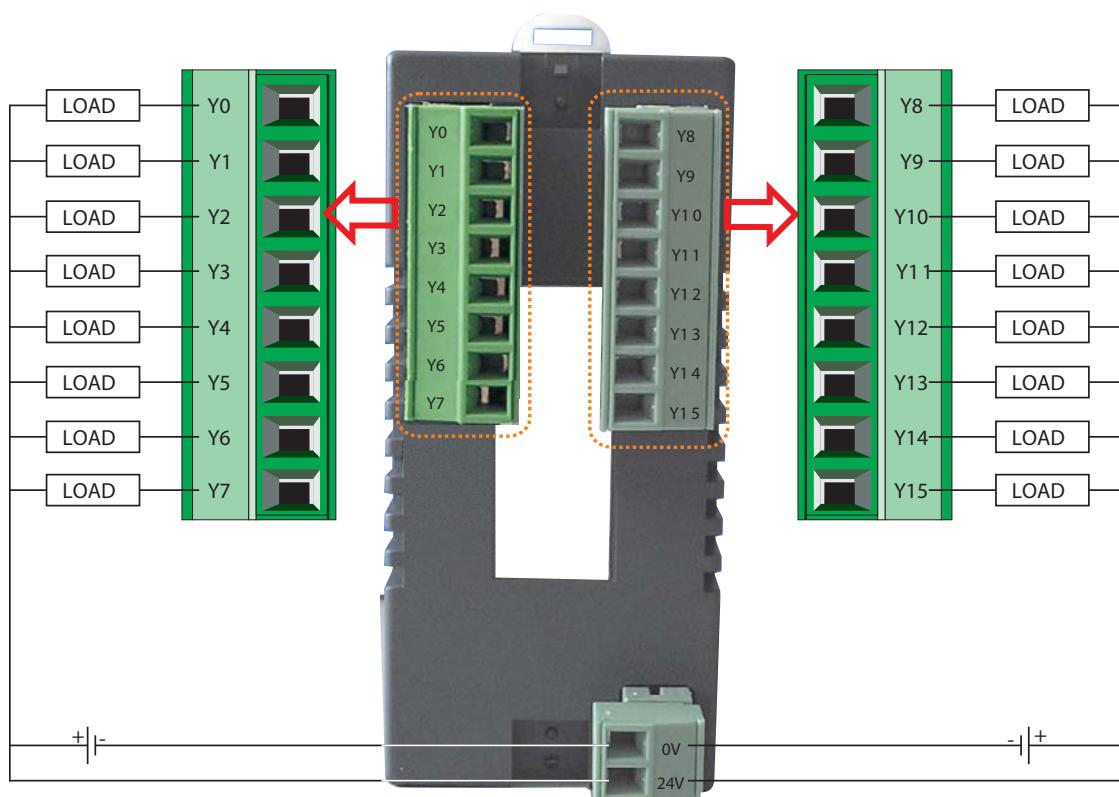
Power	3.9VDC, 0.3W from FP base model
Approvals	CE, UL
Digital Inputs	NA
Digital outputs	16 PNP type Transistor output. 16 NPN type Transistor output.
Rated Input voltage	24VDC
Rated Input Current	Upto 5mA
Input Impedance	4.9K ohm
Minimum ON voltage	15.0 VDC
Maximum OFF voltage	5.0 VDC
Turn ON time	10 msec
Turn OFF time	10 msec
Isolation	Optically isolated from the internal circuit
Connection method	Removable terminals (3.81mm pitch)
Output Capacity	500mA max for PNP and NPN type transistor output
Rated load	500mA at 24VDC
PWM Outputs	Y0
No. of outputs	1 Channels
Max. Output Frequency	5 KHz
Max. Output Count	4294967295
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	For FPED0016P: 75 gm. For FPED0016N: 65 gm.



Wiring Diagram of FPED0016P:

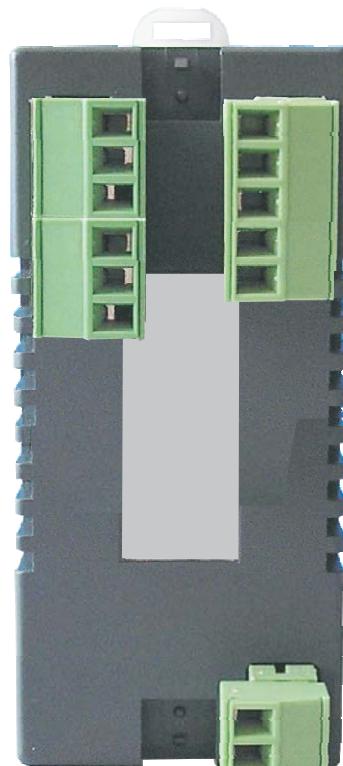


Wiring Diagram of FPED0016N:



### 2.5.7 FPEA0202L

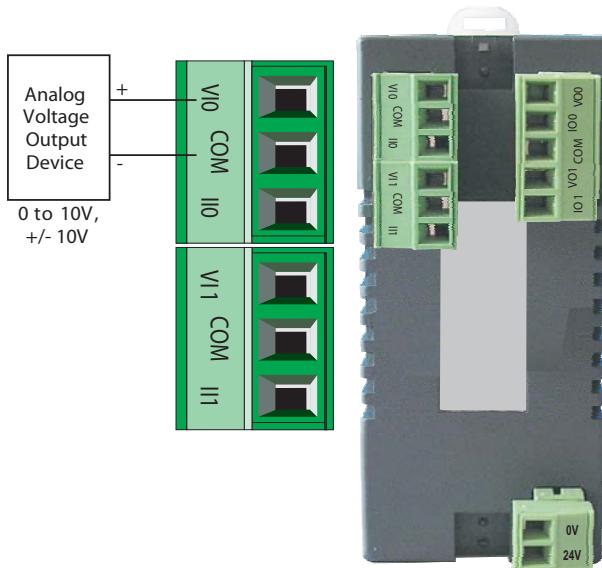
Power	3.9VDC, 0.3W from FP base model
Approvals	CE, UL
Digital Inputs	2 Inputs (4 to 20mA, 0 to 10V, -10 to +10V, 0 to 20mA)
Digital outputs	2 Outputs (4 to 20mA, 0 to 10V, 0 to 20mA)
Analog Inputs	
Number of inputs	2
Resolution	12 Bit
Voltage Mode:	
Input Range:	-10V to +10V
Value of LSB:	For 0-10V : 2.44mV For +/- 10V : 4.88mV
Input Impedance	200K Ohm
Accuracy	At 25°C: 0.1% of full scale. Overall accuracy (-25°C to 55°C) % Full Scale: 0.3% of full scale
Frequency Limit (-3db):	3.5KHz
Behavior upon sensor failure	Input goes to 0, as if no input is connected
Current Mode	
Input Range	4mA – 20mA, 0mA - 20mA
Value of LSB	3.906uA
Input Impedance	120 Ohm
Accuracy	At 25°C: 0.2% of full scale Overall accuracy (-25°C to 55°C) % Full Scale: 0.8% of full scale
Analog Outputs	
Number of outputs	2
Resolution	12 Bit
Voltage Mode:	
Output Range	0 to +10V
Value of LSB	2.44mV/step
Output Load minimum	1000 Ohm
Accuracy	At 25°C: 0.05% of full scale Overall accuracy (-25°C to 55°C) % Full Scale: ±10ppm/°C
Current Mode:	
Output Range	4mA to 20mA
Value of LSB	3.9uA
Output Load maximum	500 Ohm
Accuracy	At 25°C: 0.13% of full scale Overall accuracy (-25°C to 55°C) % Full Scale: ±10ppm/°C



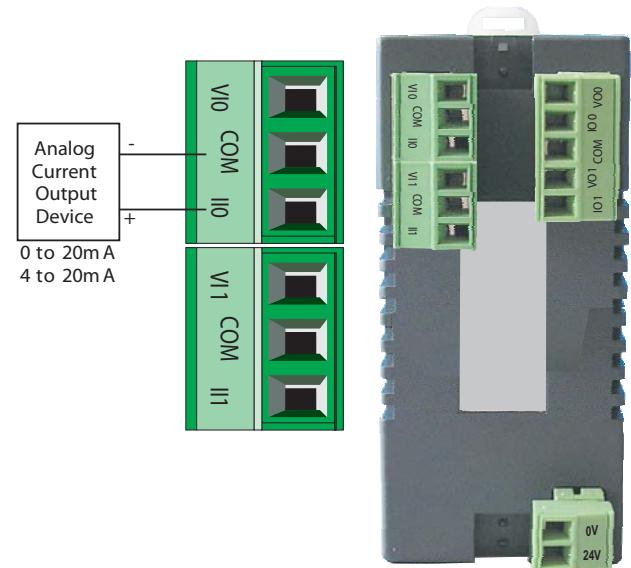
Current Mode:	
Output Range	0mA to 20mA
Value of LSB	4.8uA
Output Load maximum	500 Ohm
Accuracy:	
At 25°C:	0.13% of full scale
Overall accuracy	(-25°C to 55°C) %
Full Scale:	±10ppm/°C
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	85 g.

Wiring Diagram of FPEA0202L

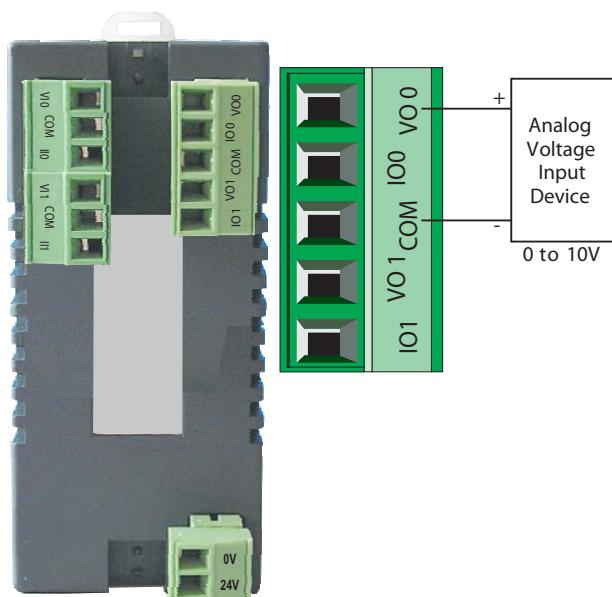
1. Wiring diagram for analog voltage input:



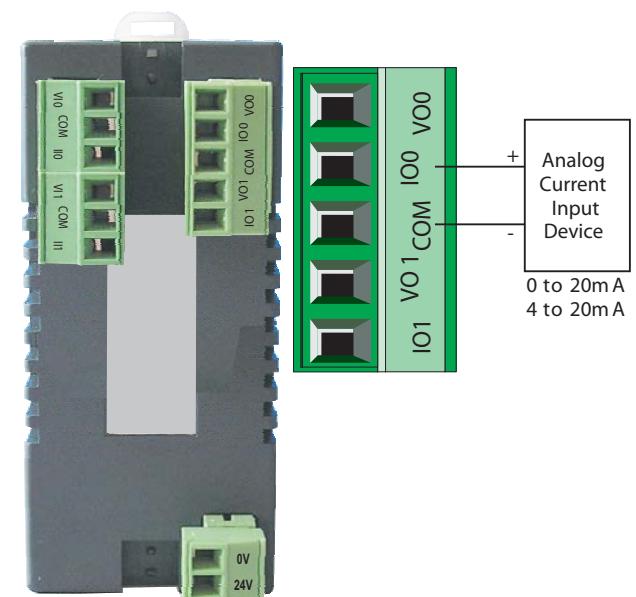
2. Wiring diagram for analog current input:



1. Wiring diagram for analog voltage output:



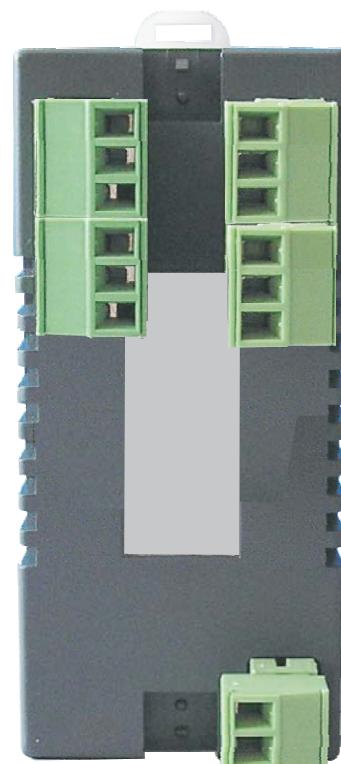
2. Wiring diagram for analog current output:



### 2.5.8 FPEA0400L

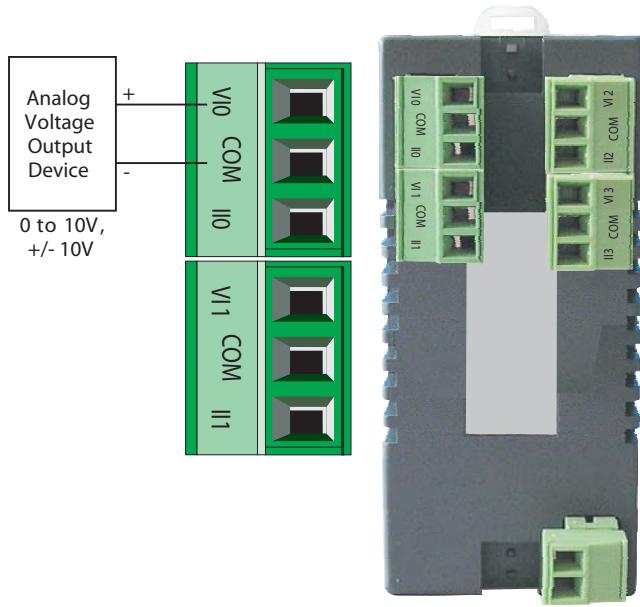
Power	3.9VDC, 0.3W from FP base model
Approvals	CE, UL
Digital/Analog Inputs	4 Inputs (4 to 20mA, 0 to 10V, -10 to +10V, 0 to 20mA)
Digital/Analog outputs	N.A.
Analog Inputs	
Number of inputs	4
Resolution	12 Bit
Voltage Mode:	
Input Range:	-10V to +10V
Value of LSB:	For 0-10V : 2.44mV For +/- 10V : 4.88mV
Input Impedance	200 K Ohm
Accuracy	At 25°C: 0.1% of full scale. Overall accuracy (-25°C to 55°C) % Full Scale: 0.3% of full scale
Frequency Limit (-3db):	3.5KHz
Behavior upon sensor failure	Input goes to 0, as if no input is connected
Current Mode	
Input Range	4mA – 20mA, 0mA - 20mA
Value of LSB	3.906uA
Input Impedance	120 Ohm
Accuracy	At 25°C: 0.2% of full scale Overall accuracy (-25°C to 55°C) % Full Scale: 0.8% of full scale

General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	80 g.

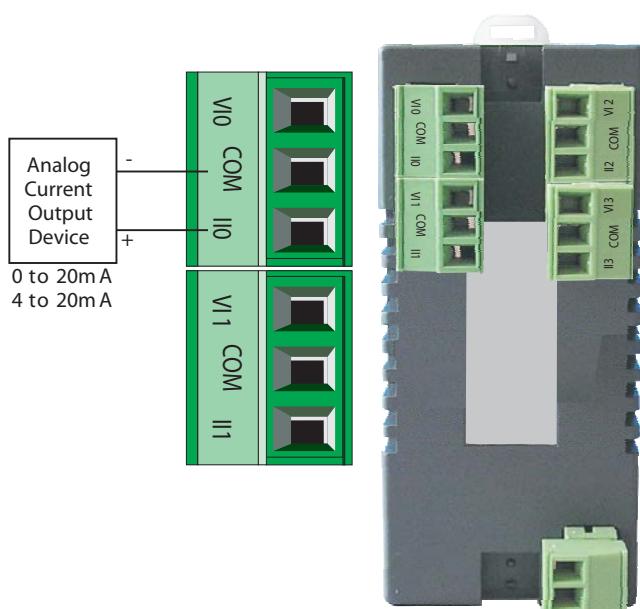


Wiring Diagram of FPEA0400L

1. Wiring diagram for analog voltage input:

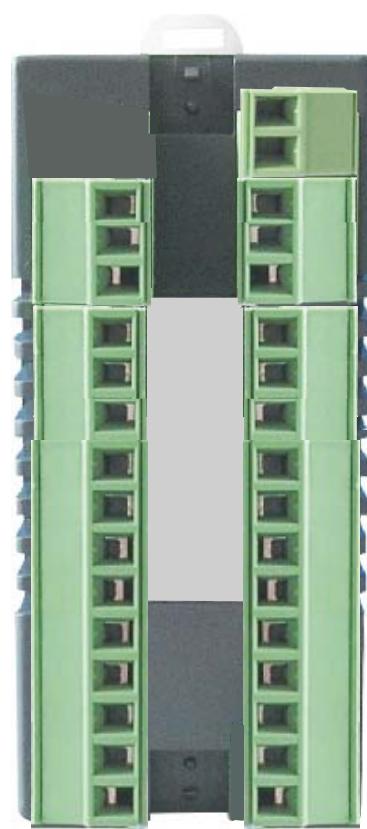


2. Wiring diagram for analog current input:



**2.5.9 FPEA-0402U-16**

Power	3.75VDC, 2W from auxiliary Power supply
Approvals	CE, UL
Analog Inputs	4 Universal Input Channels Voltage Input 0 - 10 V, 0 - 5 V, -10 to +10 V; Current Input 0-20mA, 4-20mA RTD PT100 (alpha1, alpha2), RTD PT1000, Thermocouple (TYPE J and K), mV (0-100mV, 0-50 mV)
Analog outputs	2 Output channels Voltage 0 - 10 V (Min Load 1000 ohm) or Current 4 - 20 mA (Max load 500 ohm) Current 0 - 20 mA
Analog Inputs	
Number of inputs	4
Resolution	16 Bit
Input range:	
Voltage	0 to 10VDC and 0 to 5VDC
Current	0 to 20mA and 4 to 20mA
Thermocouple	J type -210 to 1200°C K type -200 to 1373°C
mV	0 to 50mV and 0 to 100mV
RTD	α1 (PT100): -200 to 850°C α2 (PT100): -100 to 457°C and PT1000: -200 to 850°C
Overall accuracy	1% of full scale (Max)
Input Impedance	1MOhm for voltage, thermocouple, mV and RTD input 100Ohm for current input (with fuse)
Absolute maximum input	±30VDC, 30mA
Output Type	Analog (voltage and current), non-isolated
Number	2
Resolution	16 bit
Output range:	
Voltage	0 to 10VDC
Current	0 to 20mA and 4 to 20mA
Overall accuracy	1% of full scale (Max)
Load	1KOhm (Min) for Voltage and 500Ohm (Max) for current

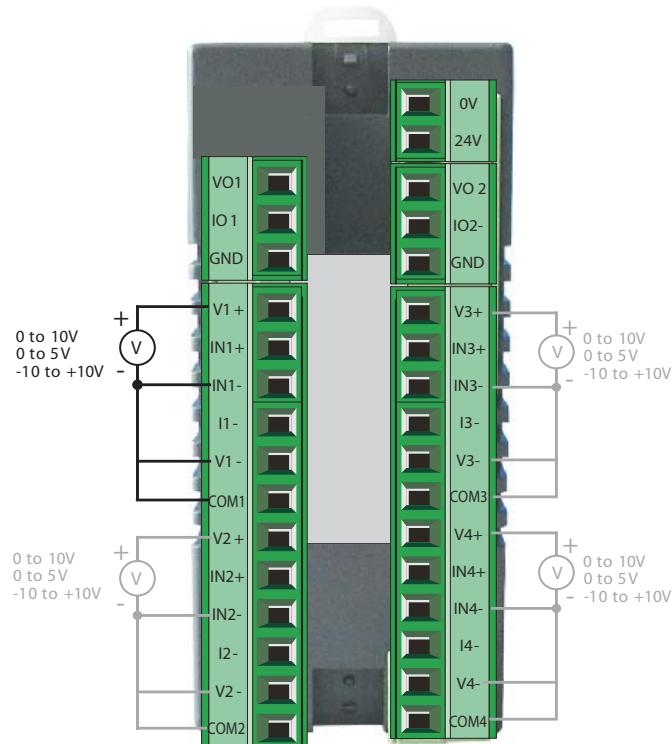


24V DC Auxiliary Power Supply	
Nominal value	24 V DC
Tolerance	-15% / +20% according to EN 61131-2
Ripple	±5% according to EN 61131-2
Permissible range	19.2 V to 30 V
Safety equipment	Surge voltage, protection against reverse polarity
Connection	3.81mm Pitch removable terminals

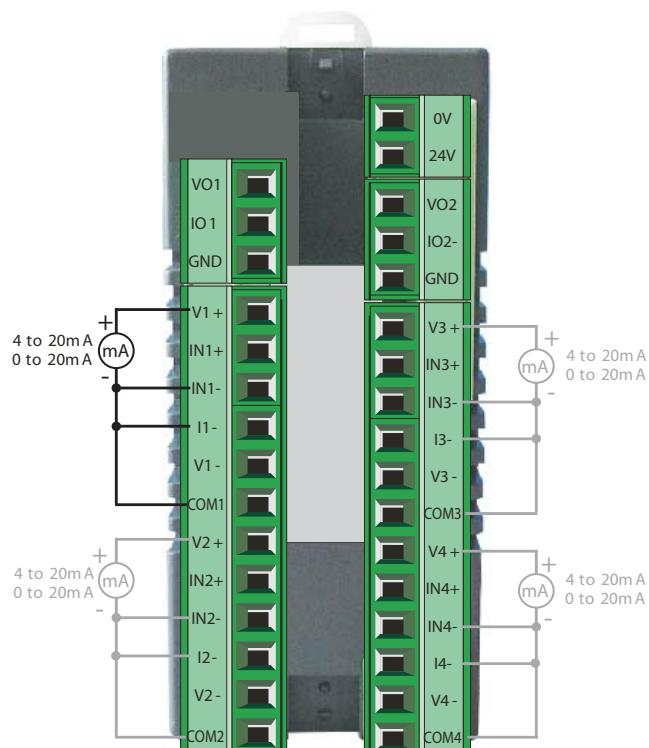
Note: This Module turns ON when Auxiliary power supply is connected.  
Unless and until Auxiliary supply is given it will not be detected by base module.

### Wiring Diagram of FPEA-0402U-16

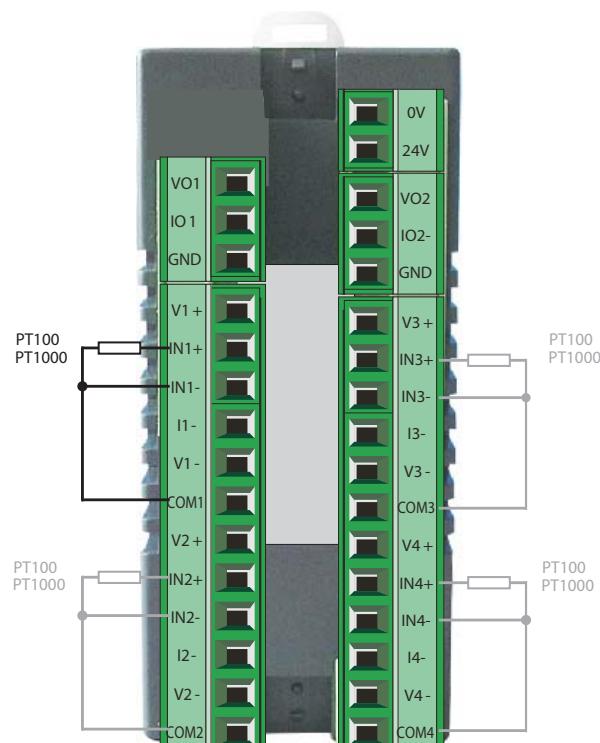
#### 1. Wiring diagram for analog voltage input:



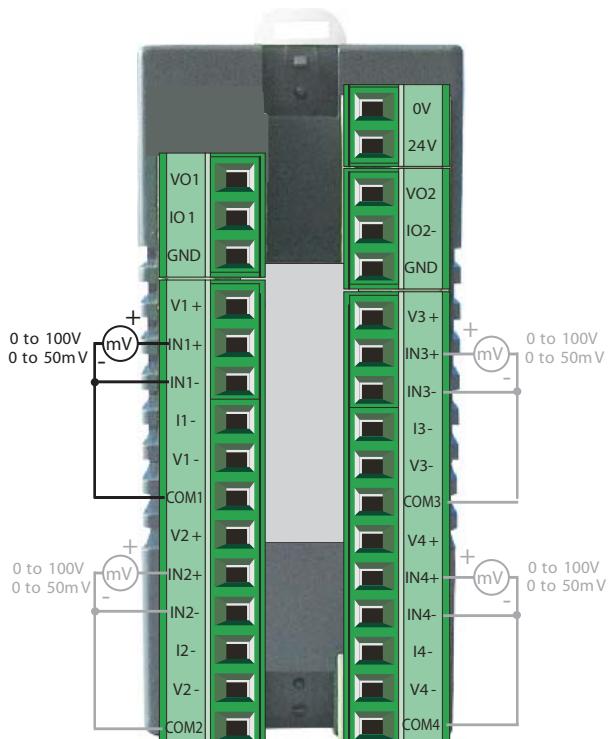
#### 2. Wiring diagram for analog current input:



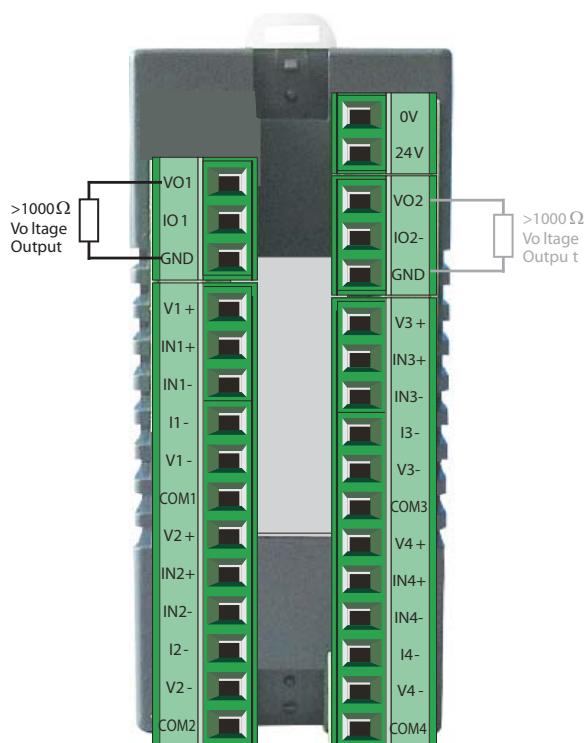
3. Wiring diagram for RTD input:



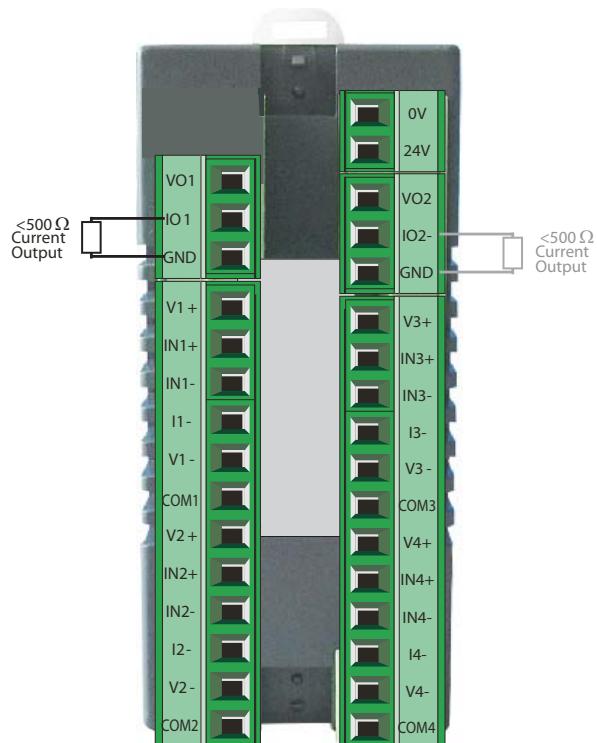
4. Wiring diagram for analog millivolt input and thermocouple:



1. Wiring diagram for voltage output:

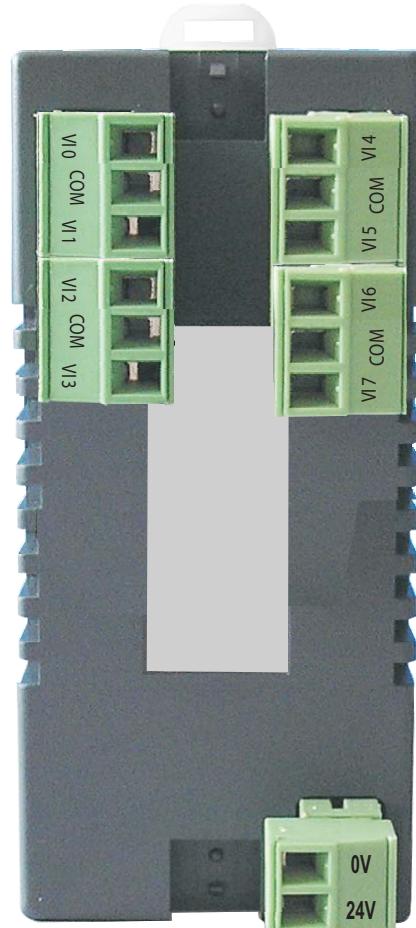


2. Wiring diagram for current output

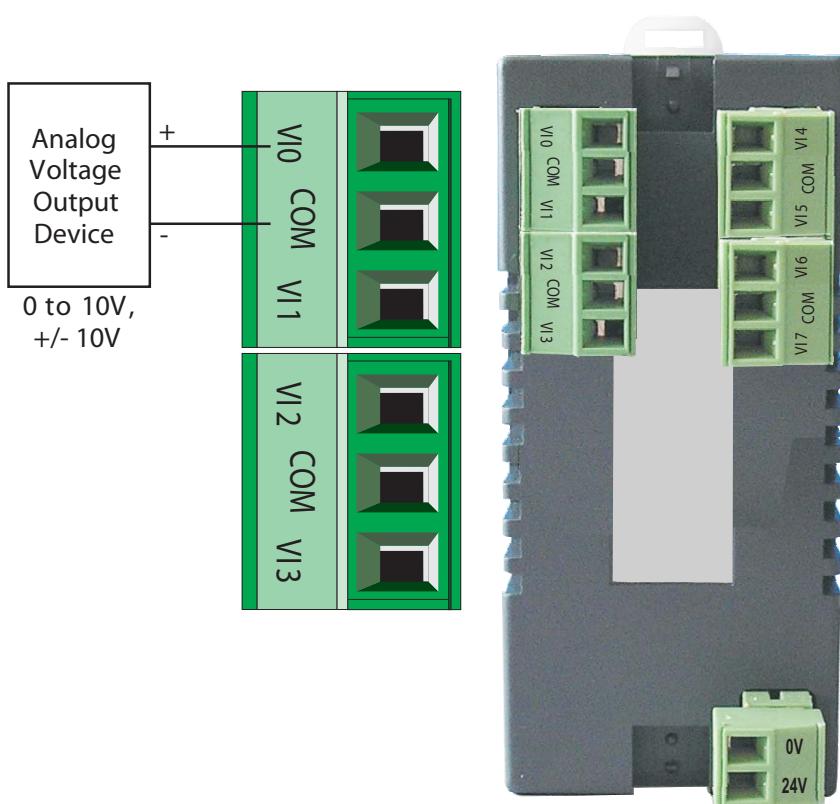


### 2.5.10 FPEA0800LV

Power	3.9VDC, from FP base model
Approvals	CE, UL
Analog Inputs	8 Inputs (0 to 10V, -10 to +10V)
Analog outputs	N.A.
Analog Inputs	
Number of inputs	8
Resolution	12 Bit
Voltage Mode:	
Input Range:	-10V to +10V, 0V to 10V
Value of LSB:	For 0-10V : 2.44mV For +/- 10V : 4.88mV
Input Impedance	200 K Ohm
Accuracy	At 25°C: 0.1% of full scale. Overall accuracy (-25°C to 55°C) % Full Scale: 1% of full scale Max.
Frequency Limit (-3db):	3.5KHz
Behavior upon sensor failure	Input goes to 0, as if no input is connected
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	80 g.

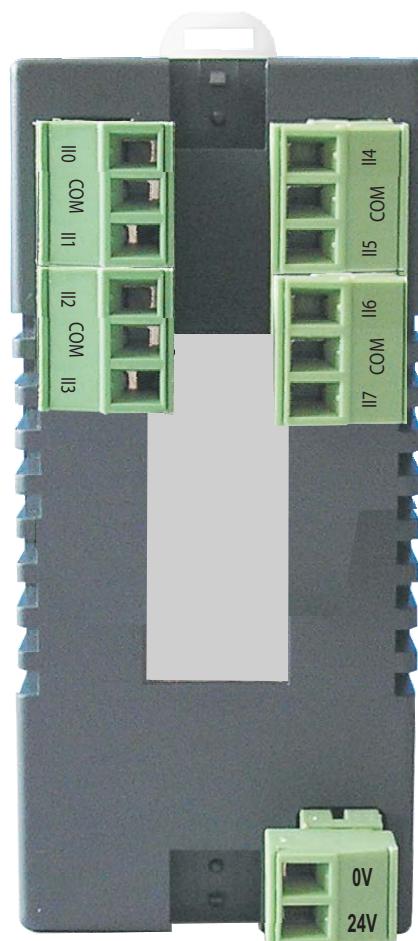


1. Wiring diagram for analog voltage module:

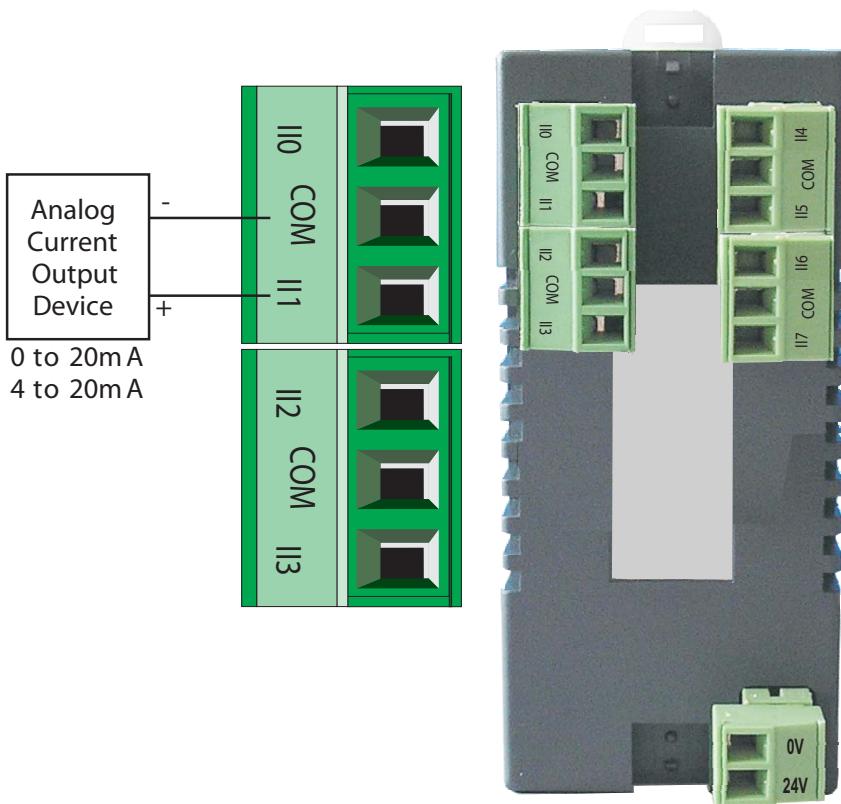


### 2.5.11 FPEA0800LC

Power	3.9VDC, from FP base model
Approvals	CE, UL
Analog Inputs	8 Inputs (4 to 20mA, 0 to +20mA)
Analog outputs	N.A.
Analog Inputs	
Number of inputs	8
Resolution	12 Bit
Current Mode:	
Input Range:	4 - 20mA and 0 - 20mA
Value of LSB:	3.906uA
Input Impedance	120 Ohm
Accuracy	At 25°C: 0.1% of full scale. Overall accuracy (-25°C to 55°C): 1% of full scale Max.
General	
Operating Temperature	0 to 55 deg.C.
Storage Temperature	-20 to 85 deg.C.
Operating Humidity	10% to 90% (Non condensing)
Mechanical Dimension	79mm X 30mm X 36mm (L X W X H)
Weight	80 g.



1. Wiring diagram for analog current module:



## 2.6 Installation Instructions

The ARGOS FP unit should be mounted on a panel. A sealing gasket and mounting clamps are provided with each FP unit for proper installation.

### Environmental Considerations:

Make sure that the unit is installed correctly and that the operating limits are followed (see Specifications for FP). Do not operate the FP in areas subject to explosion hazards due to flammable gases, vapors or dusts. A FP should not be installed where fast temperature variations are present. Highly humid areas are also to be avoided. High humidity causes condensation of water in the unit.

### Location Considerations:

Care should be taken when locating equipment behind the FP to ensure that AC power wiring, PLC output modules, contactors, starters, relays and any other source of electrical interference are located away from the FP. Particular care should be taken to locate variable speed drives and switching power supplies away from the FP.

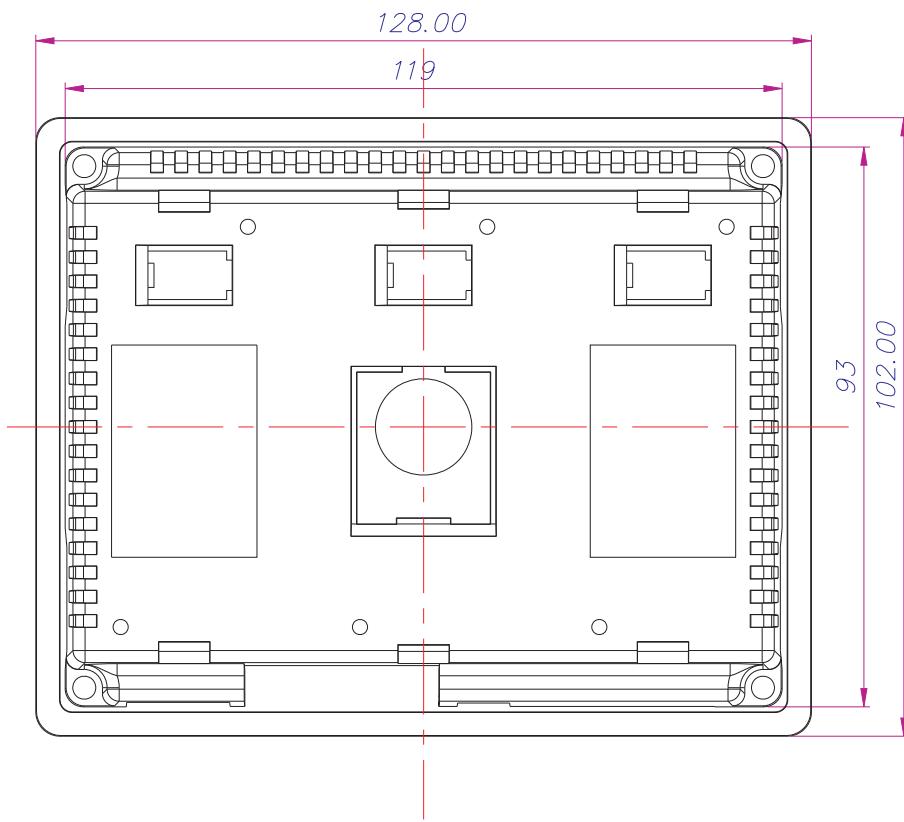
### Panel Mounting

This section presents the dimensional sketches and panel cutouts for FP models.  
(All dimensions are in mm and drawing are not to scale.)

#### 2.6.1 Panel cut-out and mounting for FP3-xxxxxx models

Below given panel cut-out and mounting information is applicable to model with 3.5" LCD and 3.8" LCD.

Panel cut-out:



Procedure to mount the unit:

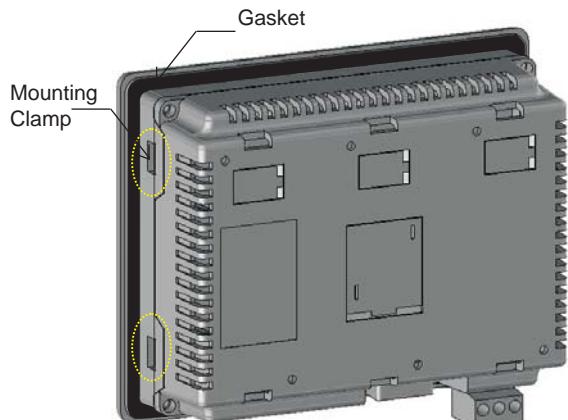
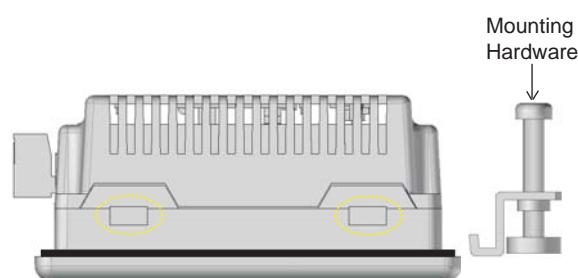


Figure - 1



Mounting Hardware is a set of cap nut, screw & clamp

Figure - 2

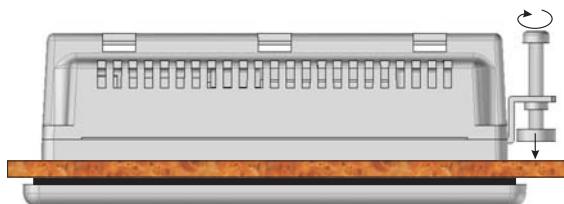


Figure - 3

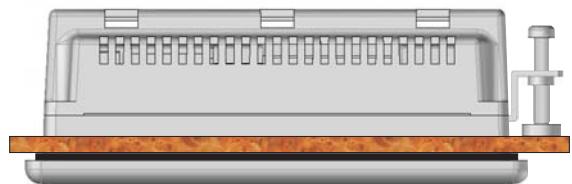
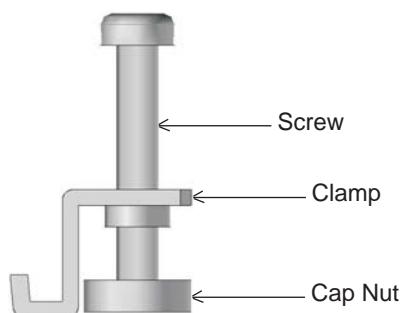


Figure - 4

Make a cut-out of the required size. Panel cut-out tolerance is +0.00mm. Put the gasket behind the bezel. The gasket may be sealed to the case using adhesive.

**FIGURE - 1** There are four (4) slots provided on the unit case to mount the unit.

**FIGURE - 2** A set of four (4) mounting hardware is provided with each FP3 unit.  
(It consists of single cap nut, screw and clamp)

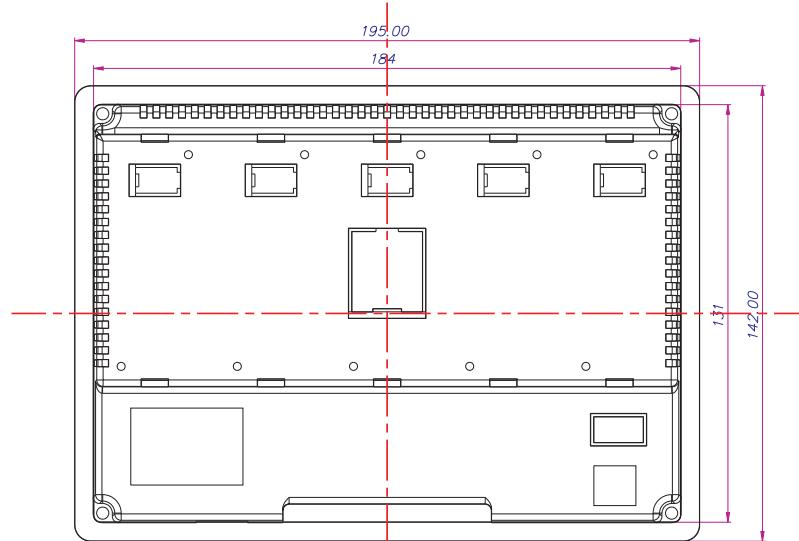


**FIGURE - 3** Insert the clamp into the slot provided on the unit case. Hold the unit straight. Tighten the mounting screws evenly to a torque between 0.5 and 0.6 Nm.

## 2.6.2 Panel cut-out and mounting for FP5-xxxxxx models

Below given panel cut-out and mounting information is applicable to model with 5.7" LCD.

Panel cut-out:



*Note: Maximum panel thickness should be 6.5mm (Tolerance: +0.00mm).*

Procedure to mount the unit:

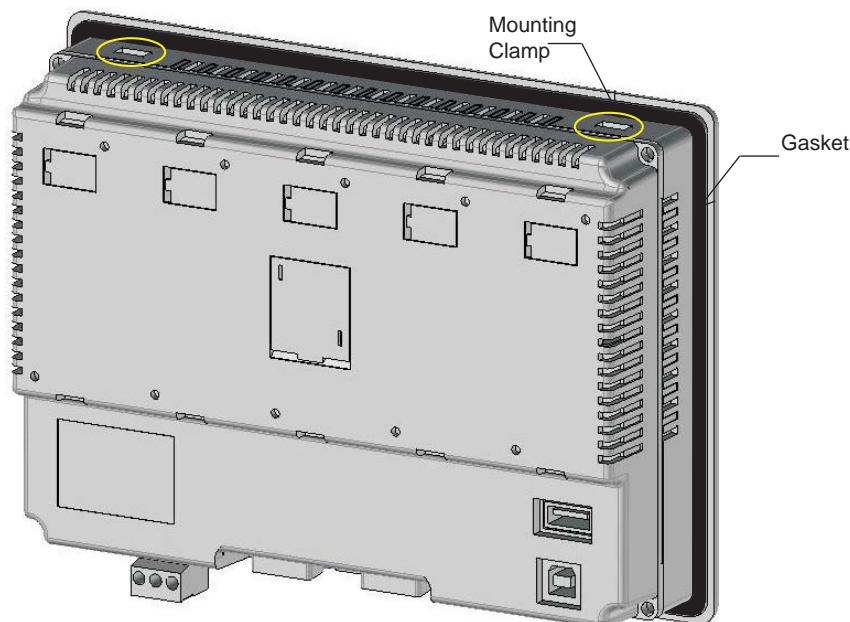
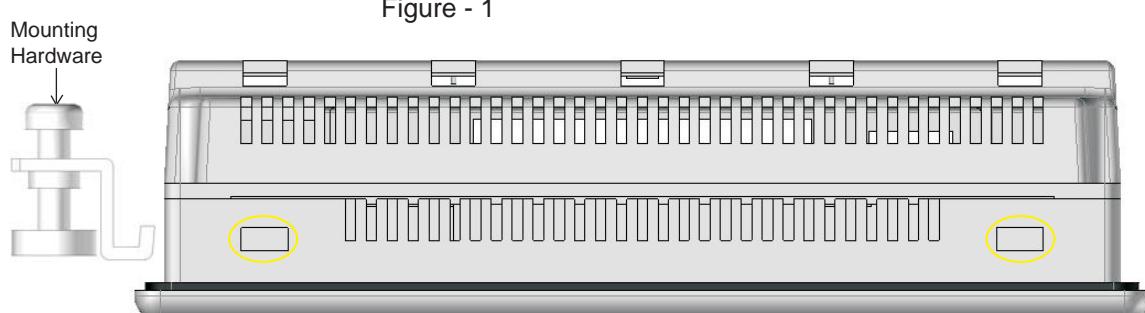


Figure - 1



Mounting Hardware is a set of cap nut, screw & clamp

Figure - 2

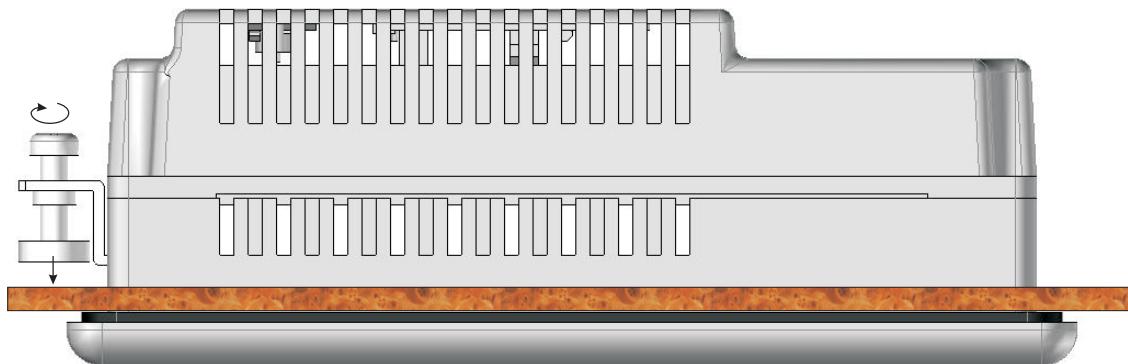


Figure - 3

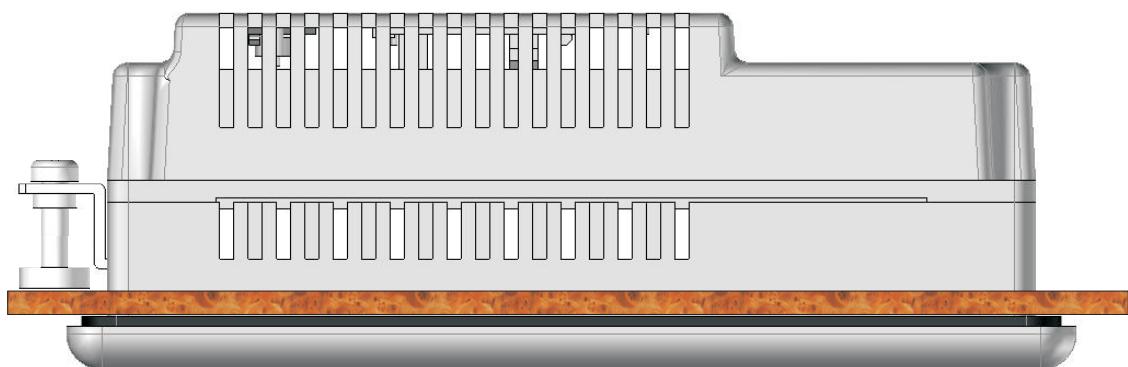
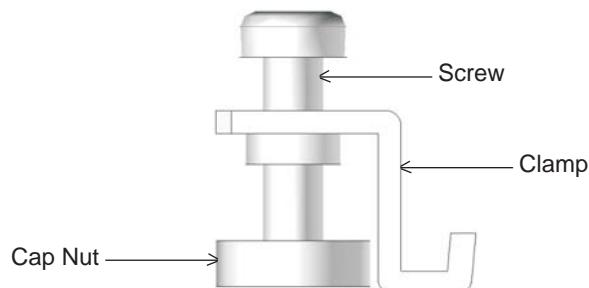


Figure - 4

Make a cut-out of the required size. Panel cut-out tolerance is +0.00mm. Put the gasket behind the bezel. The gasket may be sealed to the case using adhesive.

**FIGURE - 1** There are four (4) slots provided on the unit case to top and bottom surface.

**FIGURE - 2** A set of four (4) mounting hardware is provided with each FP5 unit.  
(It consists of single cap nut, screw and clamp)

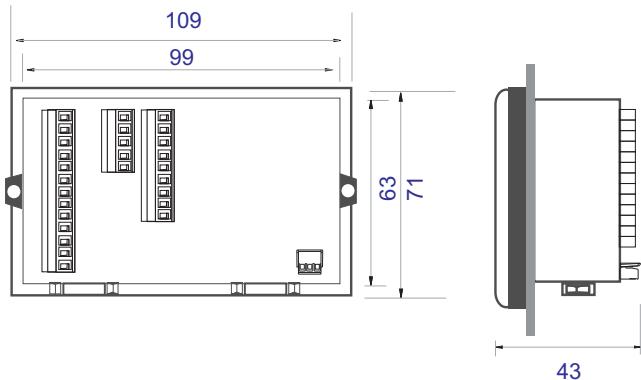


**FIGURE - 3** Insert the clamp into the slot provided on the unit case. Hold the unit straight. Tighten the mounting screws evenly to a torque between 0.5 and 0.6 Nm.

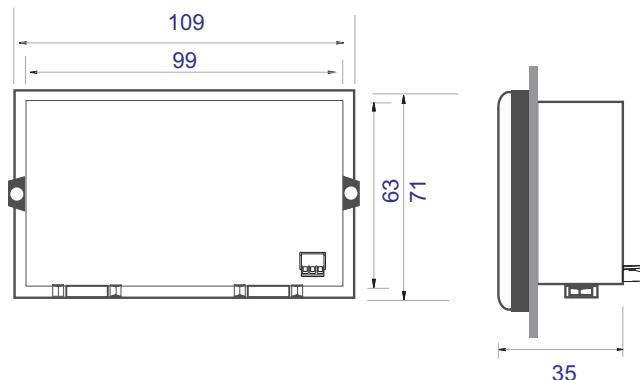
### 2.6.3 Panel cut-out and mounting for FP4020 & FP4030 models

Below given panel cut-out and mounting information is applicable to model with 16x2 Multi color LCD.

Dimensions:

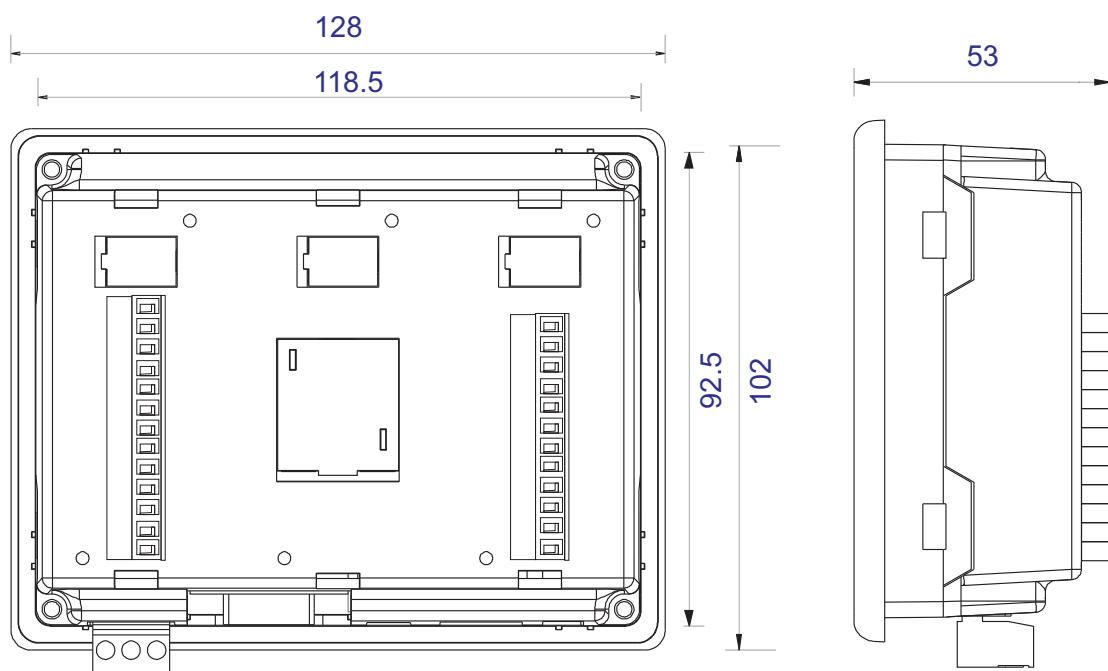


Panel Cutout:



Below given panel cut-out and mounting information is applicable to model with 128X64 Multi color LCD FP4030 Models:

Dimensions:



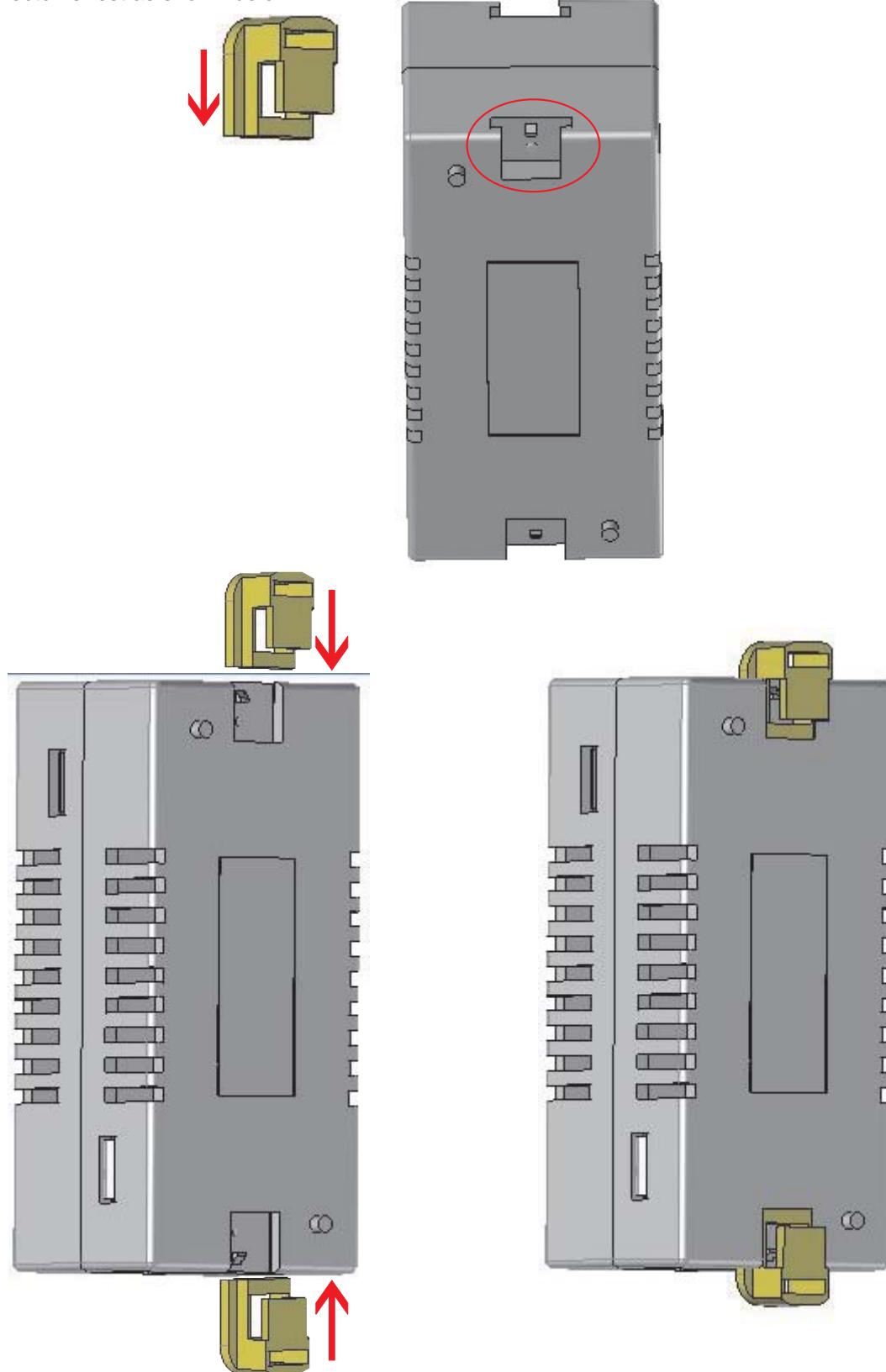
#### 2.6.4 Mouting for FP Expansion models

**Below given is the mounting information applicable to expansions with FP3 base models.**

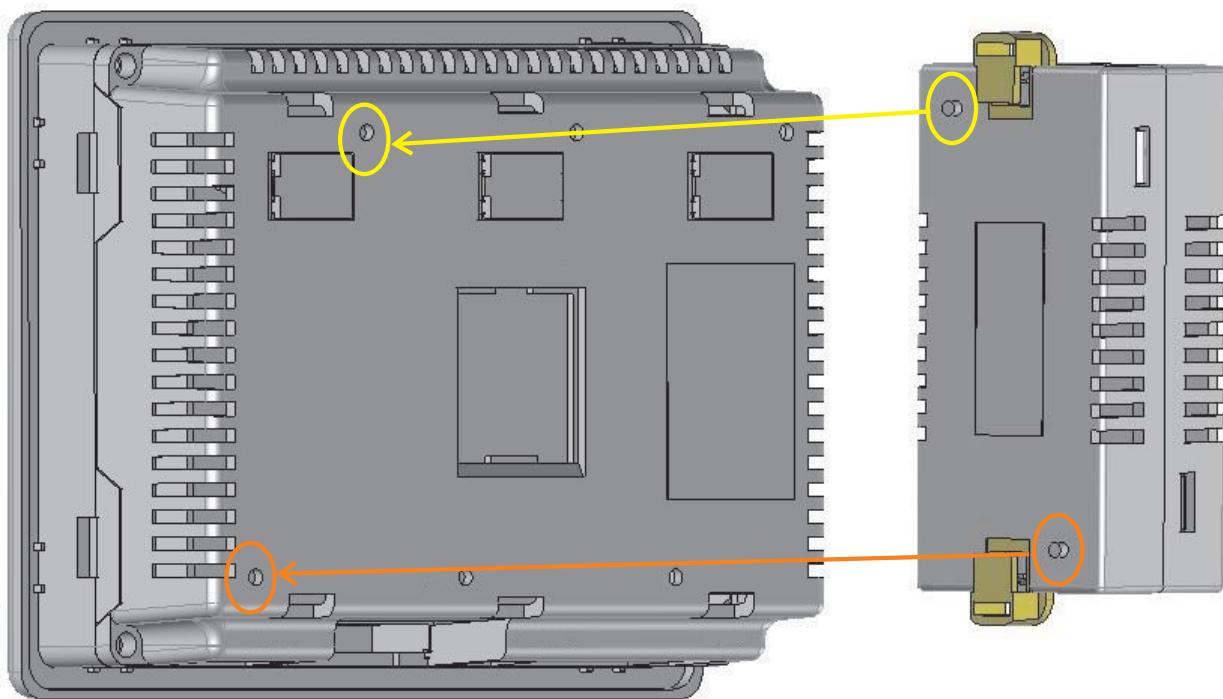
With the expansions, while unpacking the unit, two (2) locking connectors can be seen.

User can attach and detach the expansion model with the help of these locking connectors.

While seeing from both the sides of the expansion models, there is a slot in which long part of the locking connector is rest as shown below:



On the expansion case two slots are provided which are rest on the base model back case as shown in the figure below:



Here, the expansions rest with the base model. Then push down the locking connectors towards each-other. This will lock the expansion finally with the base model.

Please note that along with these two joining (Locking connector as well slots), male connector from the expansion model will be inserted into the female counter part on the base model termed as "EXPANSION PORT".

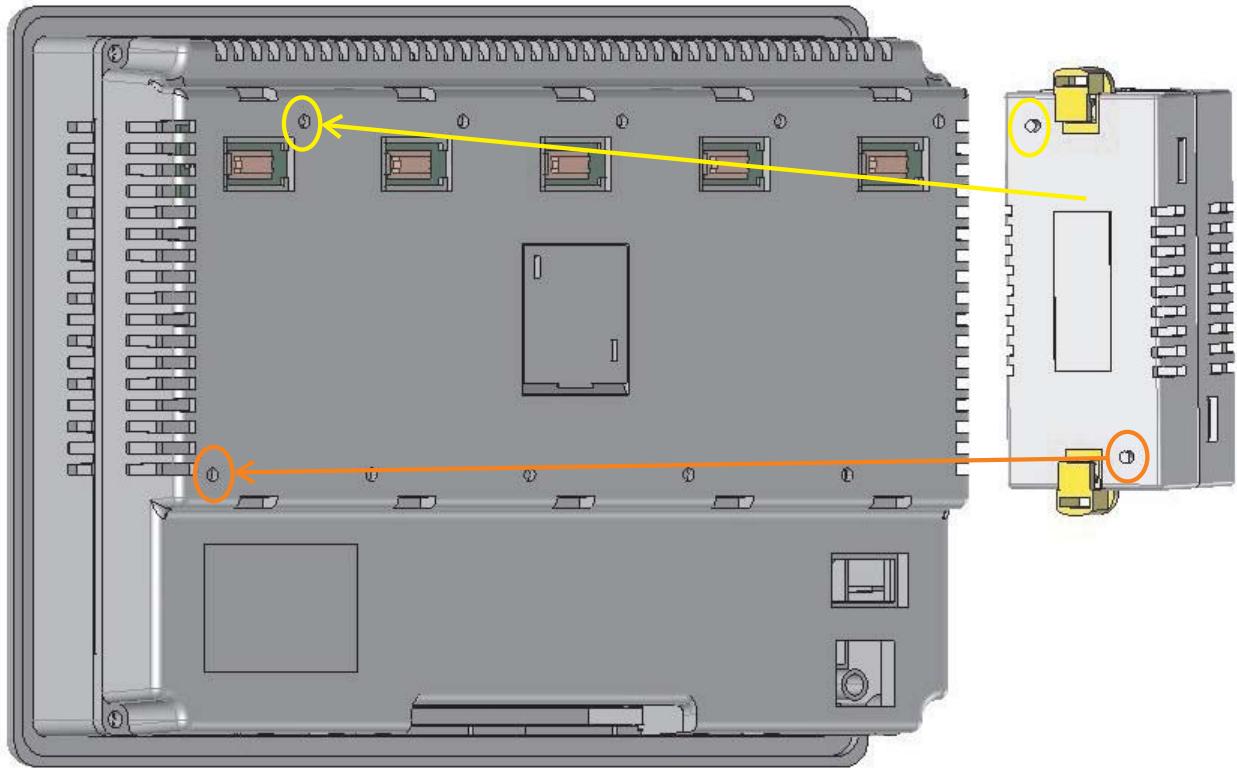
Final Unit:



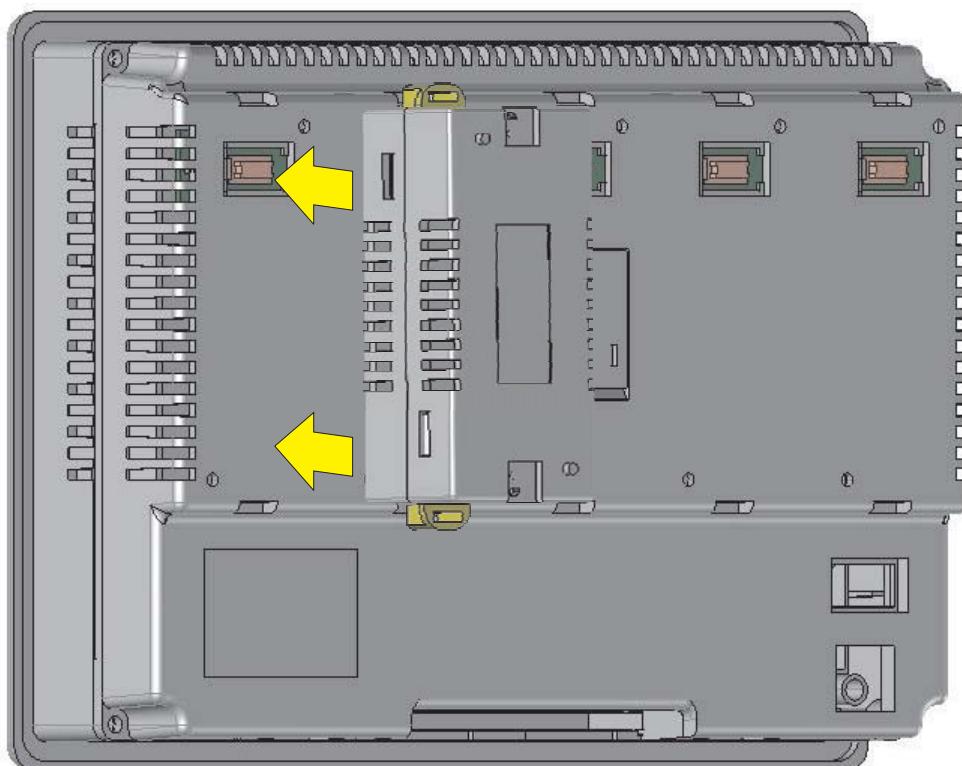
**Mounting procedure of the expansion models with FP5 models:**

The mounting procedure of the expansions with the FP5 base models is exactly same as FP3 models. Below given images will explore it more.

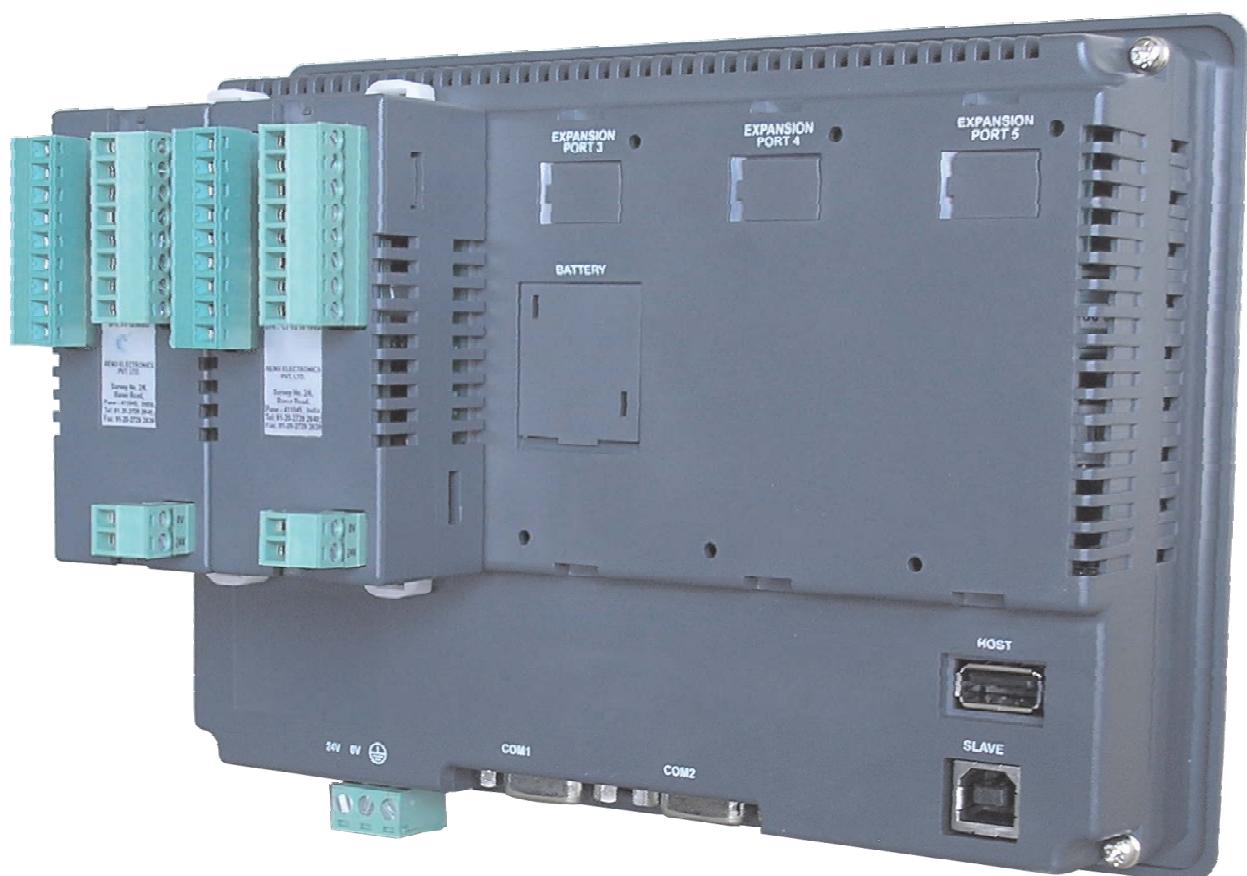
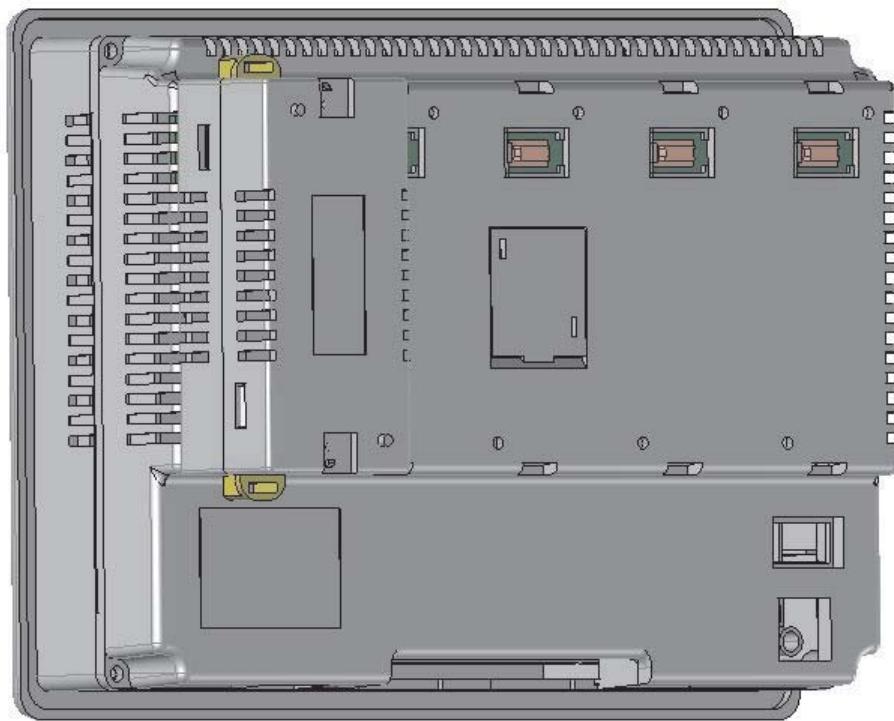
Step - 1:



Step - 2:



Step - 3: Final product:

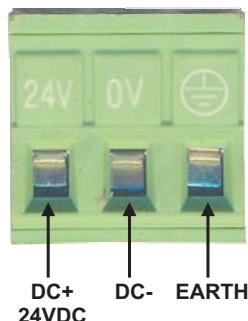


## 2.7 Wiring Diagram

If wiring is to be exposed to lightning or surges, use appropriate surge suppression devices. Keep AC, high energy and rapidly switching DC wiring separate from signal wires.

Connecting high voltages or AC power mains to the DC input will make unit unusable and may create an electrical shock hazard to personnel. Such a failure or shock could result in serious personal injury, loss of life and/or equipment damage. DC voltage sources should provide proper isolation from main AC power and similar hazards.

Pin description of the power connector for all FP models is as follows:



## 2.8 Communication Ports

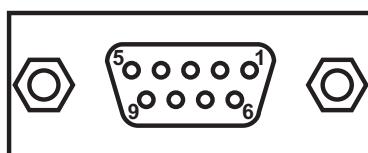
FP communication ports support four types of serial communication.

### 2.8.1 FP5-xxXXX-B series of Flexi panels:

a. Com 1 port

It is an integrated RS-232 and RS-485/RS422 communication port. It communicates with external peripherals at baud rate of 4800 - 115.2Kbps. RS485/RS422 can be used in multi drop communication network.

Connector used: Standard D-Type 9-pin female connector:

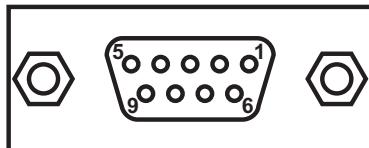


Pin number	Name	Description
1	TX+	RS485 transmit +
2	TXD	RS232 transmit
3	RXD	RS232 receive
4	RX+	RS485 receive +
5	GND	Ground
6	NC	No connection
7	NC	No connection
8	TX-	RS485 transmit -
9	RX-	RS485 receive -

## b. Com 2 Port

It is a RS-232/RS-485 communication port. It communicates with external peripherals at baud rate of 4800 - 115.2Kbps with None, Even or Odd parities.

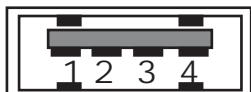
Connector used: Standard D-Type 9-pin female connector:



Pin number	Name	Description
1	TX+	RS485 transmit +
2	TXD	RS232 transmit
3	RXD	RS232 receive
4	RX+	RS485 receive +
5	GND	Ground
6	NC	No connection
7	NC	No connection
8	TX-	RS485 transmit -
9	RX-	RS485 receive -

## c. USB Host:

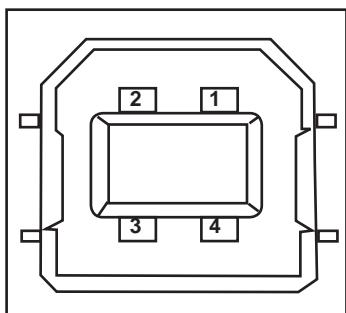
1. USB Host, compliant with USB 2.0 specification
  2. USB Host can be used to transfer logged data and historical alarm to USB memory stick.
  3. USB Host can handle only USB memory stick devices and can source current up to 150mA only.
- Connector used: Standard USB Type A Female connector.



Pin number	Name	Description
1	VBUS	+5V
2	D-	Data -
3	D+	Data+
4	GND	Signal Ground
shell		shield

## d. USB Device:

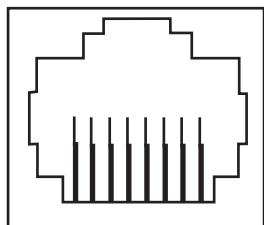
1. USB Device, compliant with USB 2.0 specification, self powered device.
2. Connector used: Standard USB Type B Female connector.



Pin number	Name	Description
1	VBUS	+5V
2	D-	Data -
3	D+	Data +
4	GND	Circuit ground
shell		shield

## e. Ethernet:

1. Fully compliant with IEEE 802.3 / 802.3u standards.
2. 10/100 Mbps support.
3. Connector used: Standard shielded RJ-45 female jack with in-built speed and link activity indication LEDs.



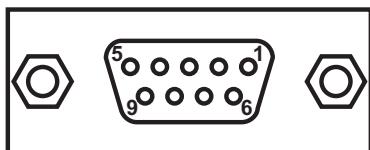
Pin number	Name	Description
1	TX+	Transmit Data +
2	TX-	Transmit Data -
3	RX+	Receive Data +.
4	NC	Unused
5	NC	Unused
6	RX-	Receive Data -
7	NC	Unused
8	NC	Unused

### 2.8.2 FP3-xXXXX-B series of FPs:

#### a. Com 1 port

It is an integrated RS-232 and RS-485/RS422 communication port. It communicates with external peripherals at baud rate of 4800 - 115.2Kbps (For MPI PLCs 187.5Kbps is also supported) with None, Even or Odd parities. RS485/RS422 can be used in multi drop communication network.

Connector used: Standard D-Type 9-pin female connector



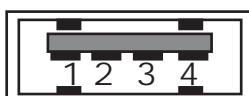
Pin number	Name	Description
1	TX+	RS485 transmit +
2	TXD	RS232 transmit
3	RXD	RS232 receive
4	RX+	RS485 receive +
5	GND	Ground
6	NC	No connection
7	NC	No connection
8	TX-	RS485 transmit -
9	RX-	RS485 receive -

#### b. USB Host:

1. USB Host, compliant with USB 2.0 specification
2. USB Host can be used to transfer logged data and historical alarm to USB memory stick.
3. USB Host can handle only USB memory stick devices and can source current up to 150mA only.

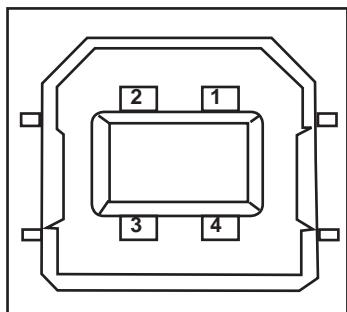
Connector used: Standard USB Type A Female connector.

Pin number	Name	Description
1	VBUS	+5V
2	D-	Data -
3	D+	Data+
4	GND	Signal Ground
shell		shield



## c. USB Device:

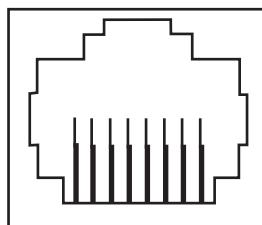
1. USB Device, compliant with USB 2.0 specification, self powered device.
2. Connector used: Standard USB Type B Female connector.



Pin number	Name	Description
1	VBUS	+5V
2	D-	Data -
3	D+	Data+
4	GND	Circuit ground
shell		shield

## d. Ethernet:

1. Fully compliant with IEEE 802.3 / 802.3u standards.
2. 10/100 Mbps support.
3. Connector used: Standard shielded RJ-45 female jack with in-built speed and link activity indication LEDs.



Pin number	Name	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+.
4	NC	Unused
5	NC	Unused
6	RX-	Receive Data-
7	NC	Unused
8	NC	Unused

### 2.8.3 USB host functionality

The USB host port can be used to perform a download or an upload of an application to or from an USB stick. This enables the user to update the ARGOS unit or download logging data without the use of a Personal computer.

The touch screen based FP-Series (FP4035T, FP4035T-E, FP4057T, FP4057T-E) only supports USB sticks that are formatted FAT or FAT32.

The following USB sticks are supported:

- (i) Transcend: Model - JF V30 (1 GB)
- (ii) Transcend: Model - JF V30 (2 GB)
- (iii) Transcend: Model - JF V30 (4 GB)
- (iv) Transcend: Model - JF V30 (8 GB)
- (v) SanDisk: Model - Cruzer Micro (2 GB)
- (vi) SanDisk: Model - Cruzer Micro (4 GB)
- (vii) Kingston: Model - DataTraveler (4 GB)
- (viii) PNY: Model - Micro Attache (4 GB)
- (ix) Sony: Model - Micro Vault (2 GB)

Note

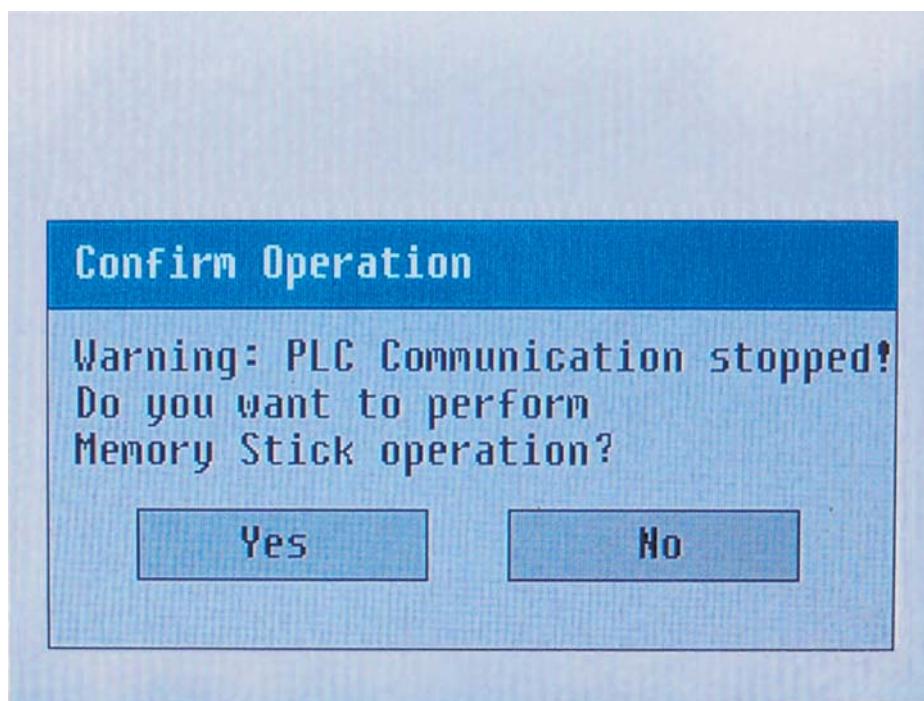
Make sure to backup all data on the USB stick before connecting it with the FP-Series.

To establish a connection between the USB stick and the FP-Series proceed as follows:

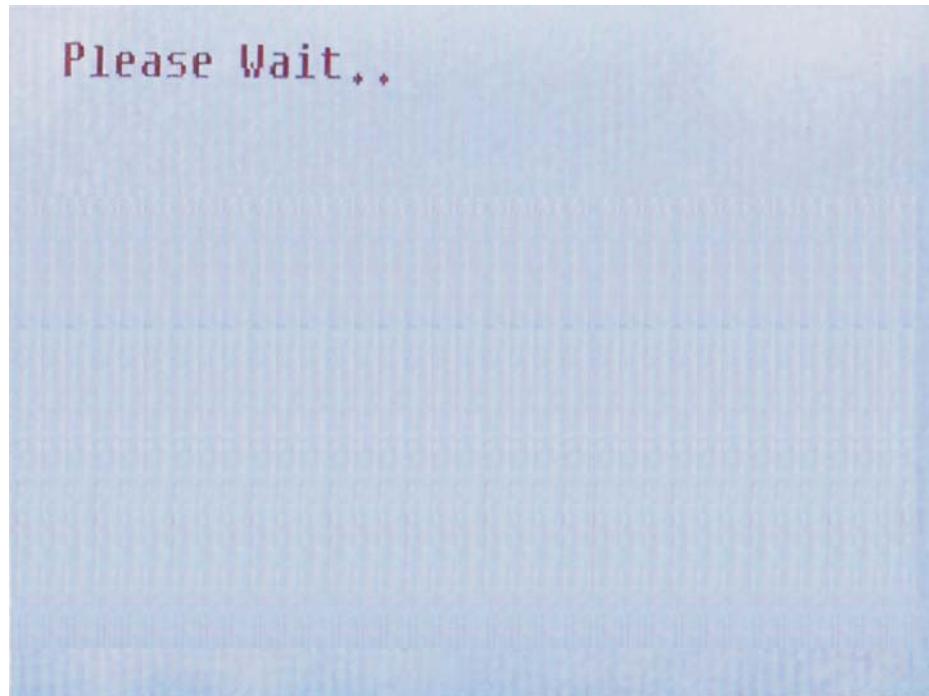
1 Place the USB stick in the USB host port.

2 An **empty** FP-Series (no application or no firmware) will automatically start the USB Host function when the FP-Series detects an USB stick.

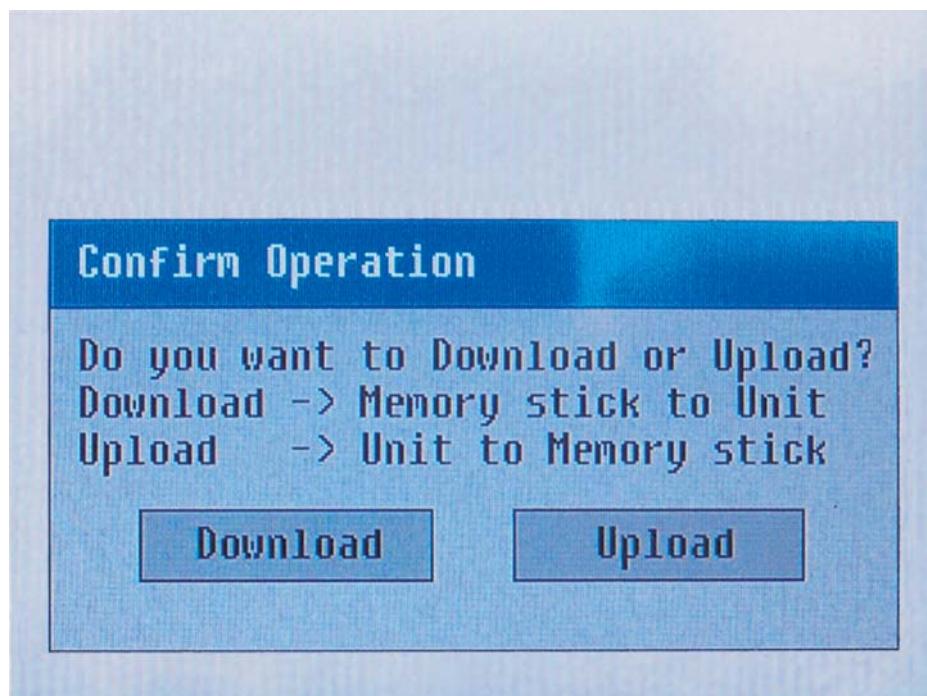
3 When running an application setting system bit s037 to 1 will start USB host function provided the USB stick is connected.



4. Click **YES** to continue.



5. Click **Download** or **Upload**.



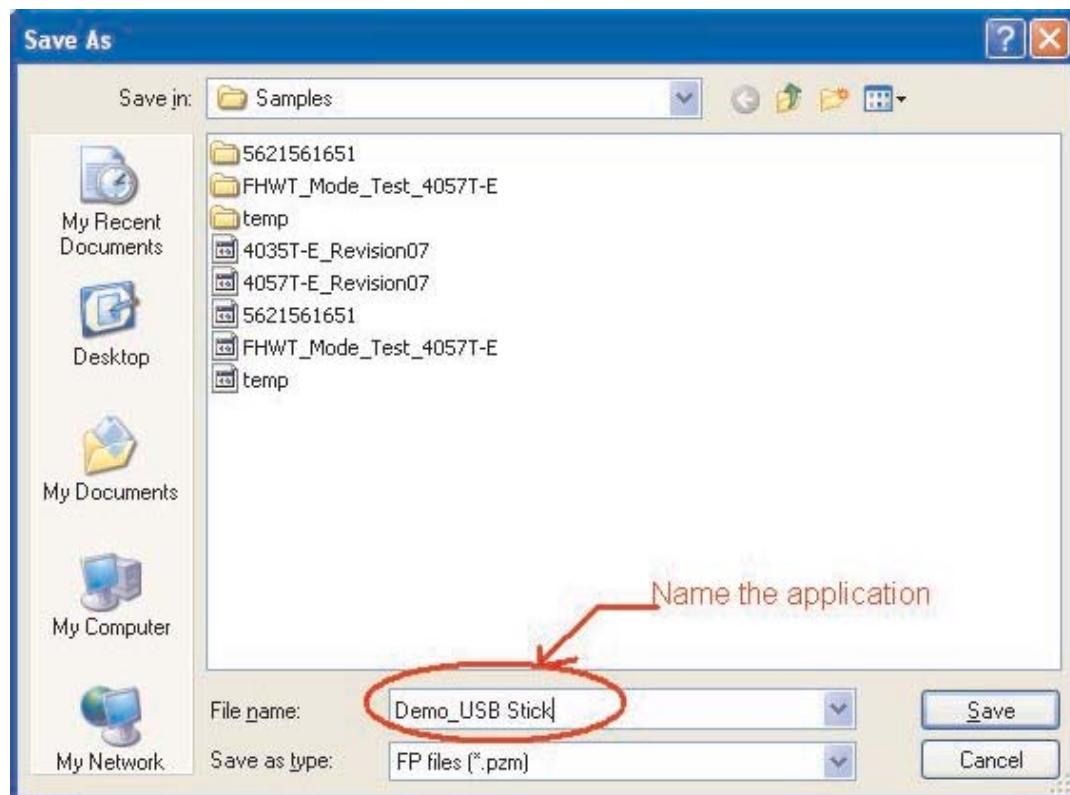
### Downloading from FP unit to USB Stick:

The following data can be downloaded to the FP unit.

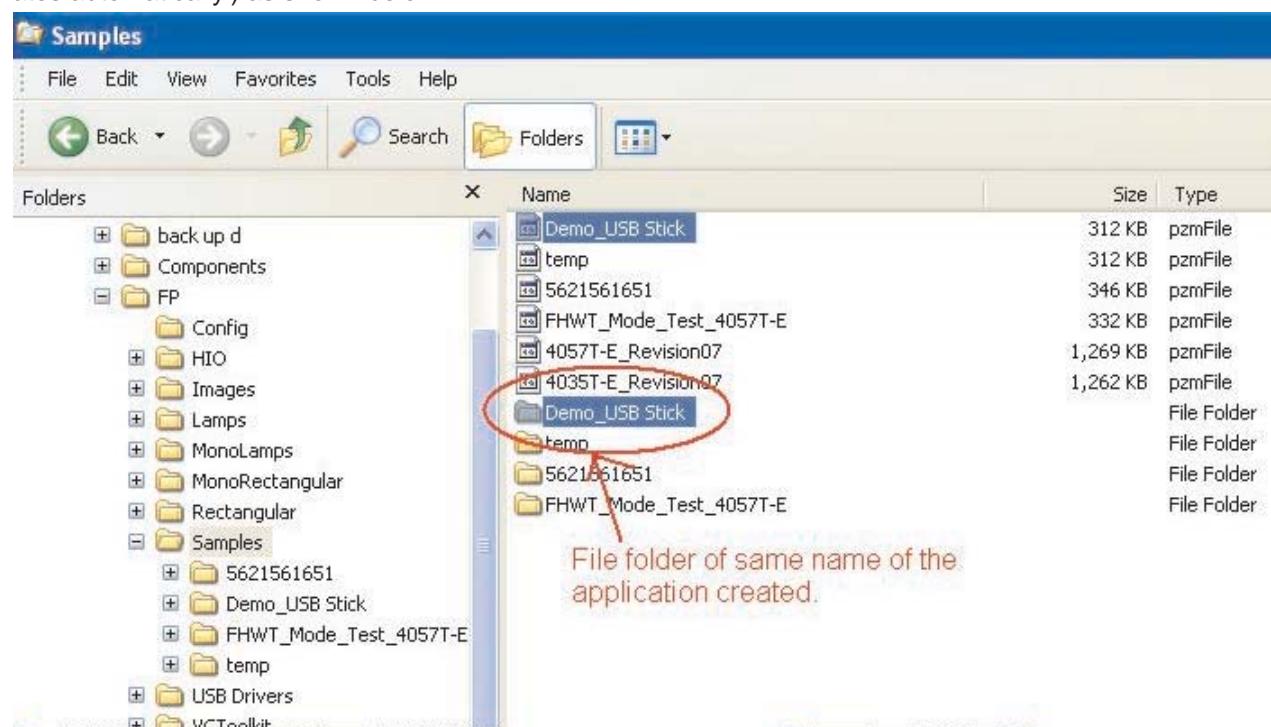
- Application
- Firmware
- Fonts
- Ladder

For this follow below said steps before connecting USB to unit.

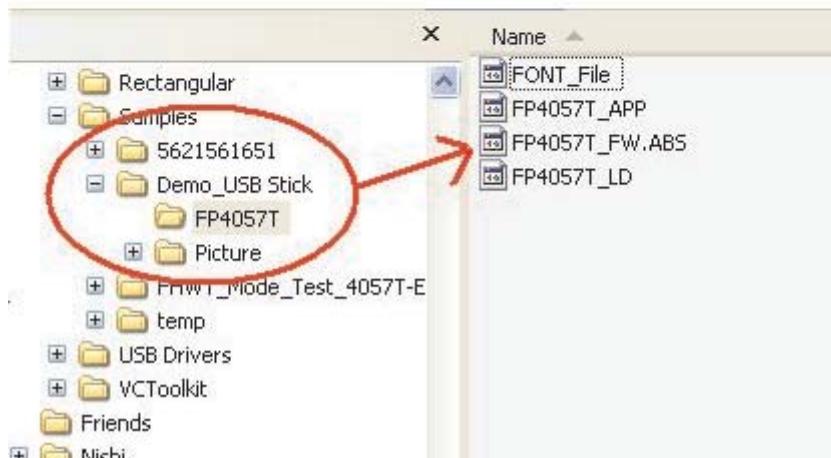
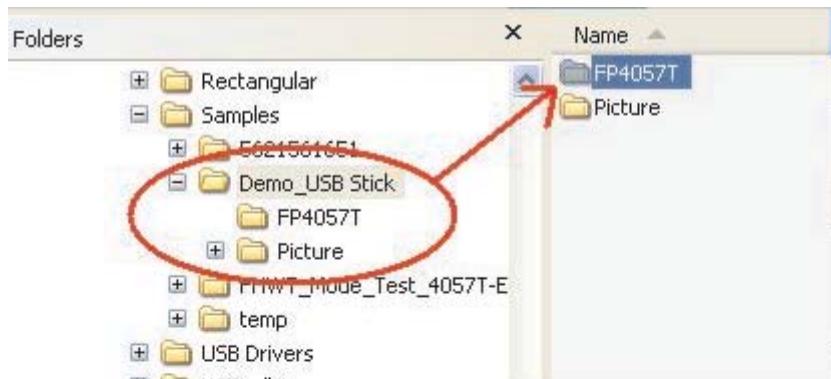
1. Create Application which you wanted to be downloaded to USB stick.
2. Save the application. This will ask application name. Name it. Example is shown below:



3. Then go to explorer, you will see a “\*.pzm” file with the respective file folder of same name. (This generates automatically.) as shown below:



4. Please go to the application named file folder, you will see folder with name of the model used. This folder is now containing four types of the files as shown here.



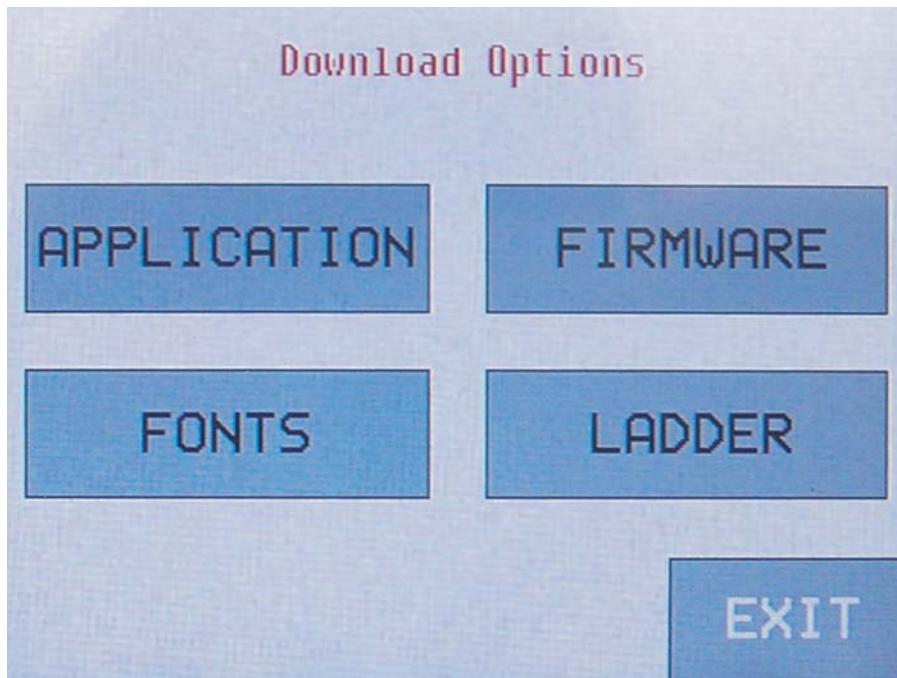
5. Model named file folder is contain four types of files:

- a) "\*.pzm"
- b) "\*.abs"
- c) "FONT\_File.bin"
- d) "\*.bin"

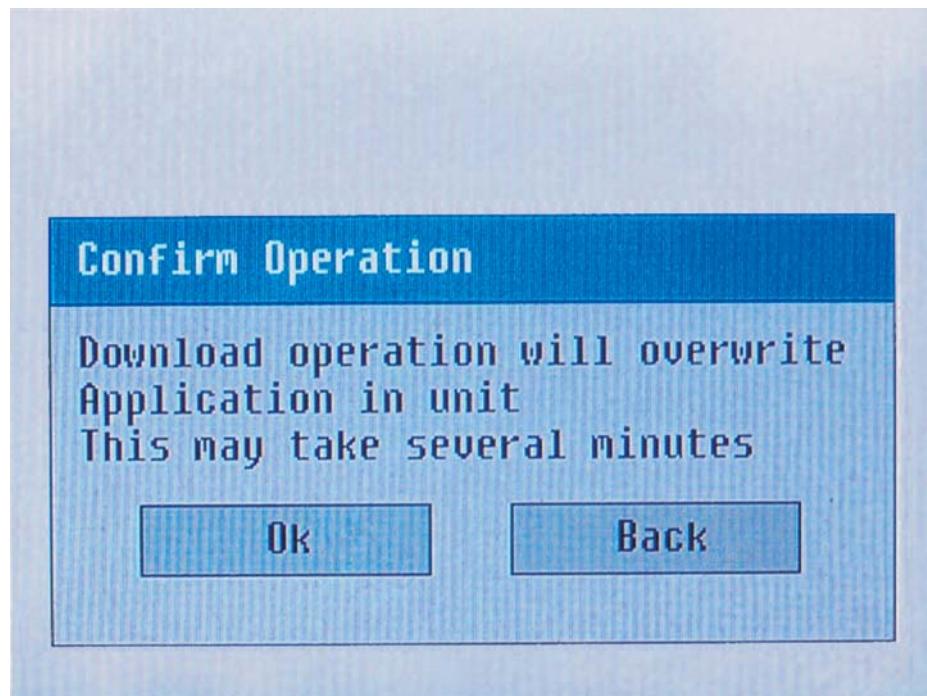
User should copy the whole folder (containing these four types. e.g. "FP4057T" shown here) in USB stick to download in to the unit.

6. To download from USB stick, please follow below said steps:

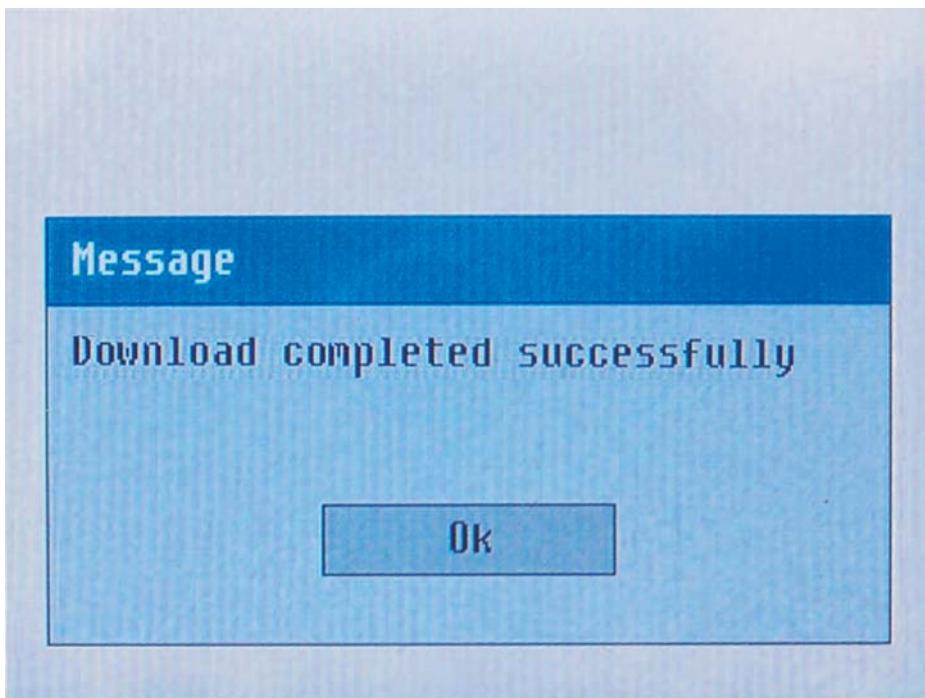
- a) Connect the USB stick to the unit.
- b) Click **Download**.



- c) Click APPLICATION to erase old application and download the new application from the USB stick to FP unit.



- d) The following message is displayed after downloading.



Click OK to finish.

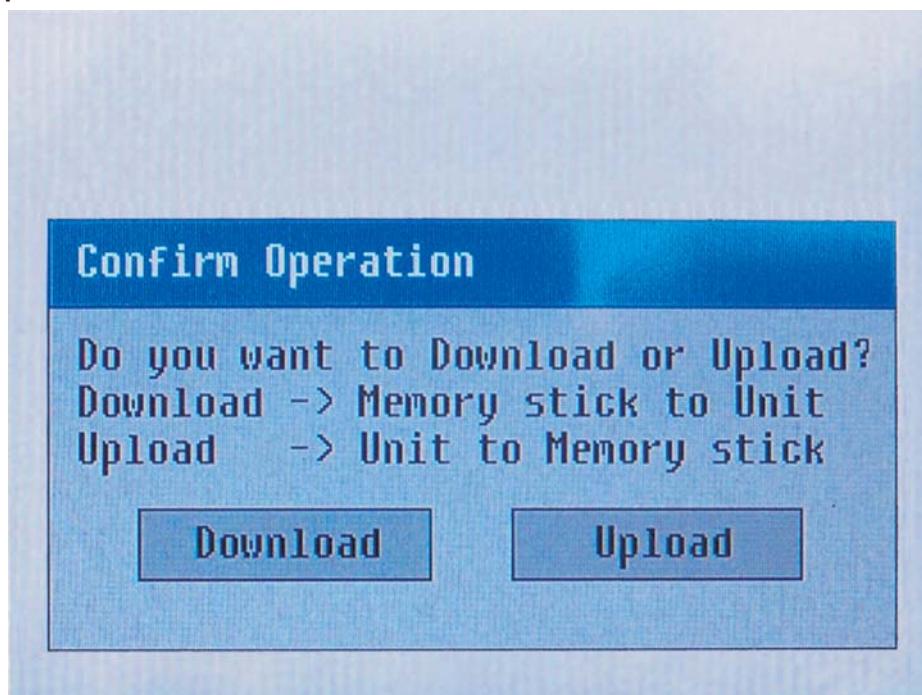
Now you can repeat step 3 and 4 for firmware and font.

**Uploading from FP unit to USB stick:**

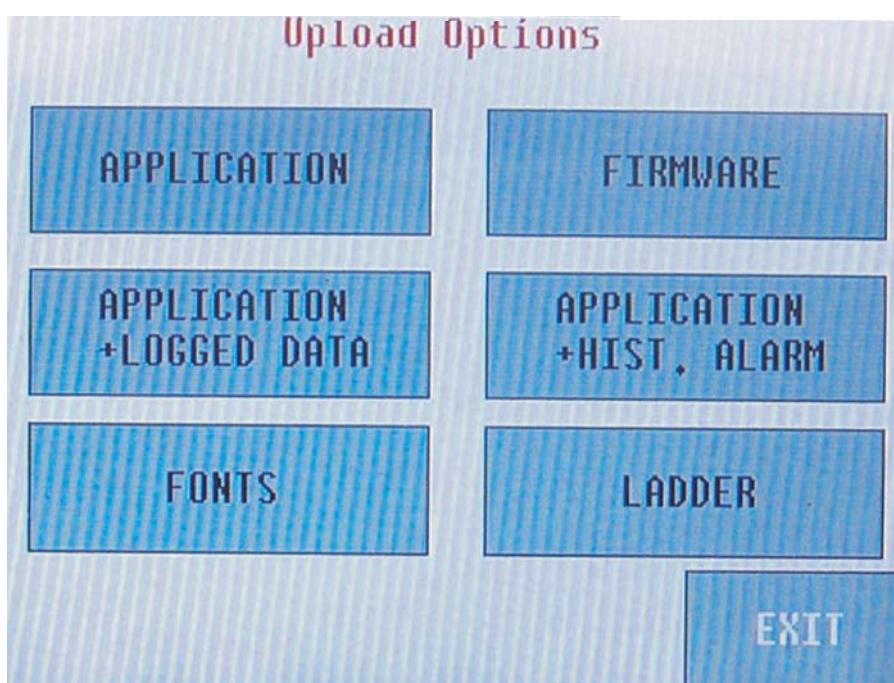
The following data can be uploaded from FP unit to the USB stick:

1. Application
2. Firmware
3. Application + logged data
4. Application + Historical alarm data
5. Fonts
6. Ladder

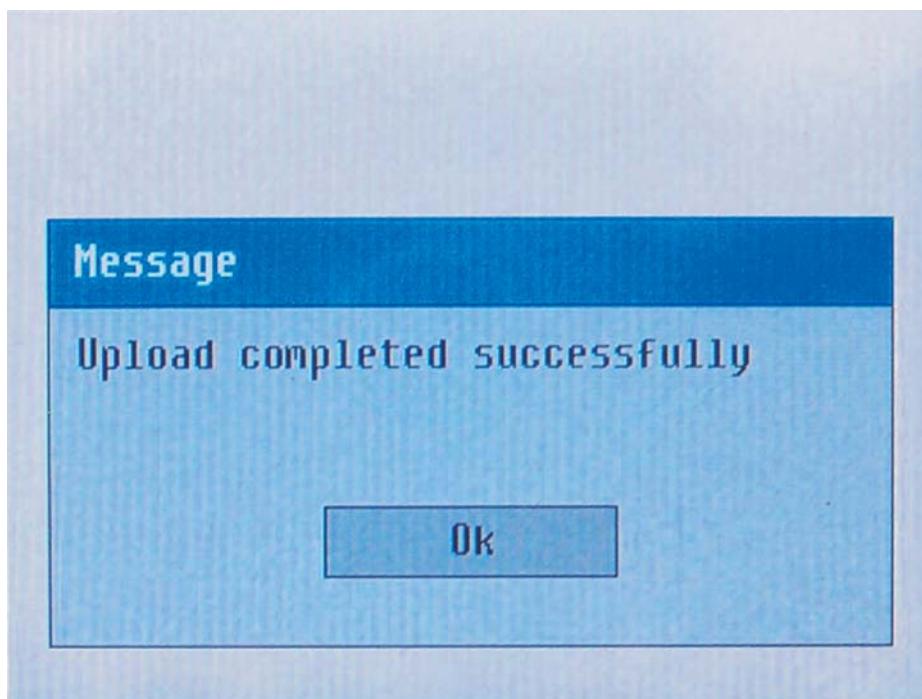
- a) Connect the USB stick to the unit.  
b) Click **Upload**.



- c) Click APPLICATION to upload the new application from the FP unit to the USB stick.



- d) The following message is displayed after uploading.



Click OK to finish.

Repeat step 3 and 4 if you need to upload any of the other options also need to be uploaded to the USB stick.

## **BEFORE YOU BEGIN**

In this chapter. . . .

- \* Connecting ARGOS FP unit to a computer
- \* Starting FlexiSoft Configuration Software
- \* Setting Network Configuration

### 3.1 Connecting the ARGOS FP unit to your computer

Before you start your first project, the unit should be connected to the computer so that the project can be downloaded after creating it.

#### To connect your unit to the computer

- 1) Connect a +24VDC power supply to the unit.
- 2) Connect the programming cable to the computer and FP.  
Connect programming cable to the communication port of the unit.  
Download Firmware i.e. driver for the PLC. The unit cannot communicate with PLC till the required driver is downloaded.
- 3) Apply power to the unit.

#### To connect your PLC to unit

A unit can communicate with any PLC without any change in the FP unit hardware. To communicate with a PLC, the unit needs:

- 1) Proper Communication Driver for the PLC  
Each PLC has a defined protocol for communicating with any device. The communication driver is downloaded into the unit along with the firmware. The communications driver varies from PLC to PLC. This driver enables the unit to talk to a specific PLC.
- 2) FP unit - PLC communication cable  
A proper FP unit - PLC cable is required for error free communication with any PLC.

### 3.2 Installing FlexiSoft configuration software:

To install *FlexiSoft* configuration Software:

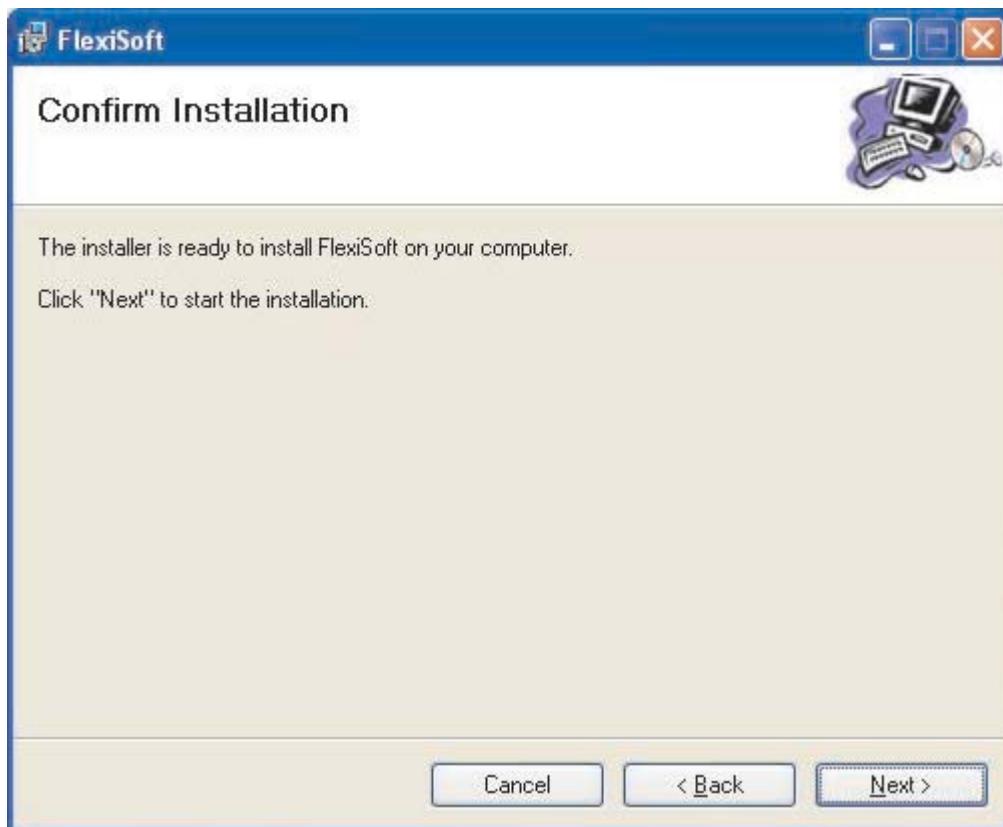
1. Open Microsoft® Windows.
2. Select Run and Pop up window appears. Type the path for installing the Setup.  
This will install FlexiSoft Configuration Setup Software.
3. When you click on OK, Welcome window appears on the screen. Click on Next.

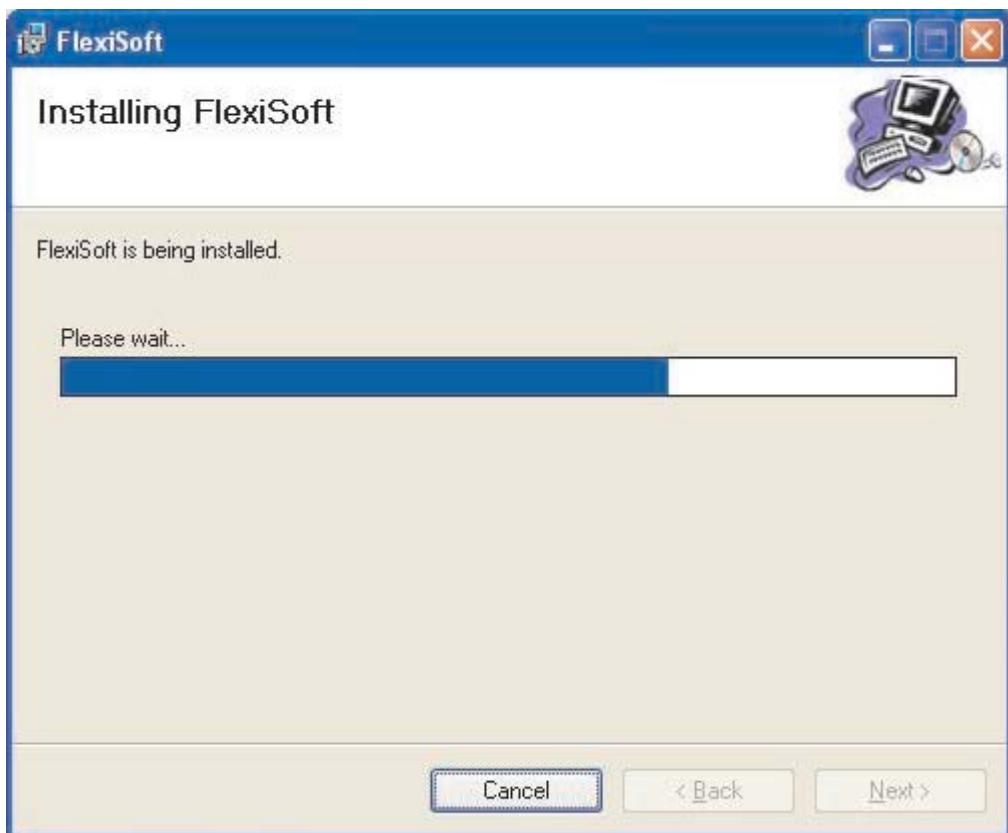


4. Select the destination folder where setup will install the files.

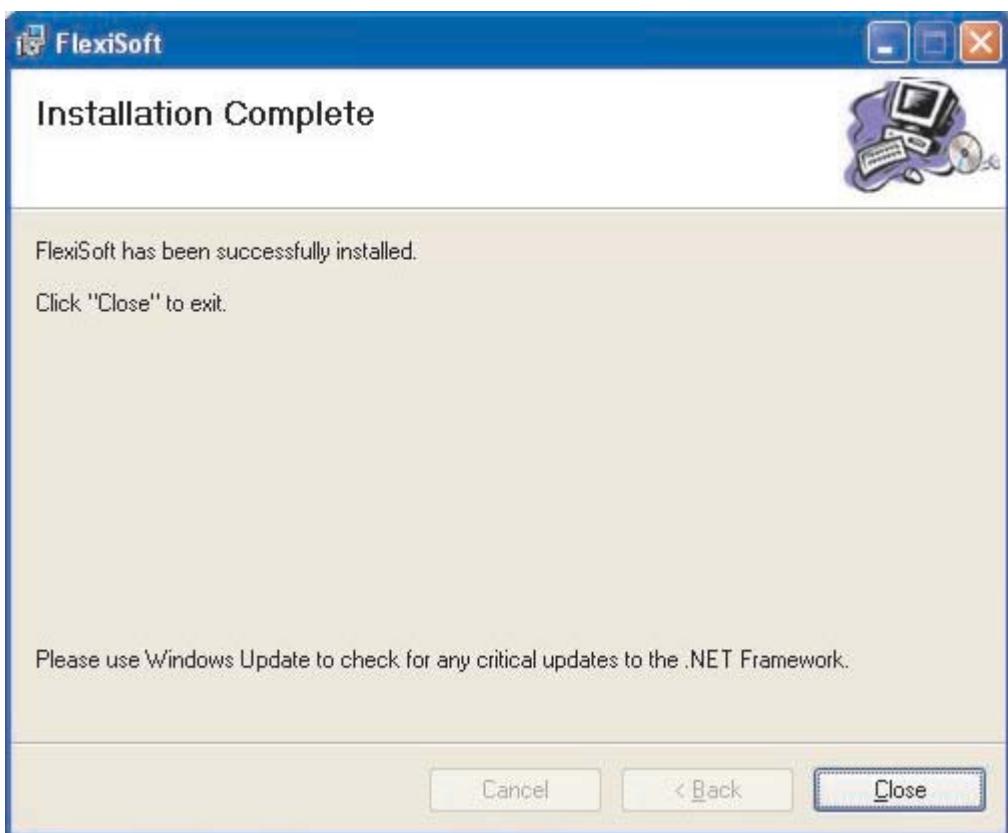


5. Click on "NEXT", installation starts. A dialog box indicating the status of progress of installation will display.





6. A screen is displayed to inform you when installation is completed.



This procedure installs FlexiSoft Software in start menu (in selected folder).

### 3.3 Steps for starting FlexiSoft Software

1. In Windows click the Start button.
2. Select Programs.
3. Select FlexiSoft
4. Select New Application either from Tool station or from File Menu.
5. Select the model and product type that you would like to set by clicking on picture of the product in the list.
6. Define the Unit Settings.
7. Next step is to define Tag Database and then define the screens according to your application.

### 3.4 Uninstalling FlexiSoft Software

1. In Windows click the Start button.
2. Select Programs.
3. Select FlexiSoft.
4. Select UnInstall.

Following screen will display. The screen will ask you for the confirmation for uninstalling FlexiSoft configuration software.



### 3.5 Setting network configuration

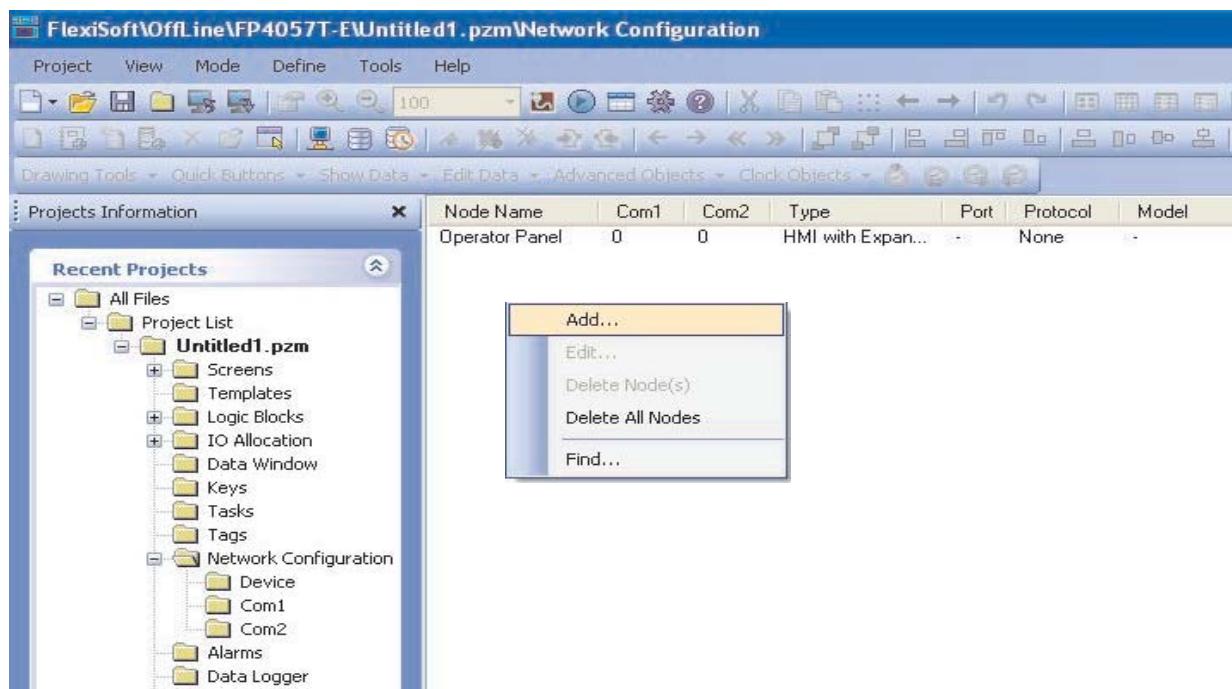
You can communicate between unit with any PLC without any changes in the hardware. To communicate with PLC you needs proper communication driver to be available with unit. Each PLC has a defined protocol for communicating with any device. PLC driver is downloaded into unit along with the firmware. This driver enables the unit to talk to a specific PLC.

Using this configuration screen you can set the node address (0 to 255), node name for each port. You can change default values generated by editing these two fields.

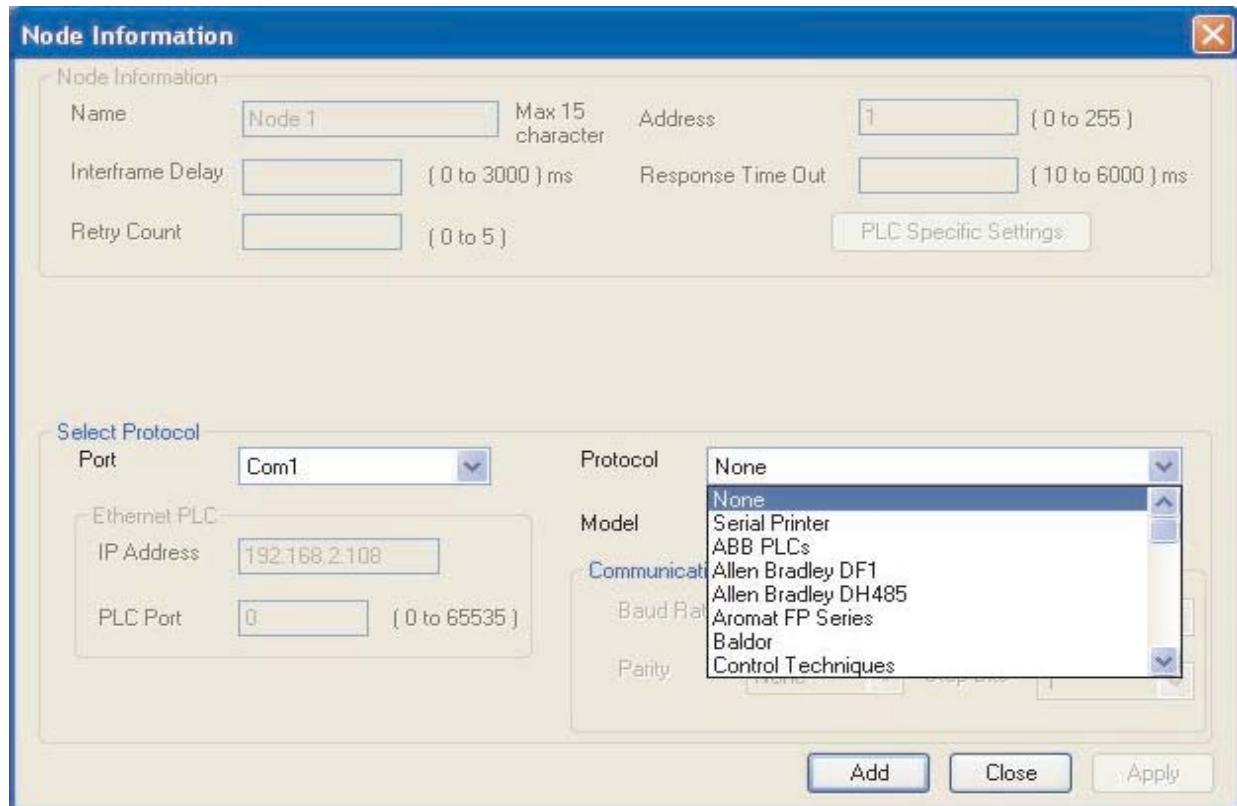
When you are working on "Nodes" section from project information area; right click on the application window. You will find "Add" option there; which shows a Protocol selection box as shown below:

## Before you begin

- Step -1 Go to “Network configuration”  
Step -2 Right click on the working application window



- Step -3 Select protocol from protocol list



By clicking this selection box you can see list of Model Numbers in PLC Model selection Box. Select PLC Name from Protocol drop down list and PLC Model name from Model drop down list.  
PLC specific data button is activated only if selected PLC has Special PLC specific data to be set.

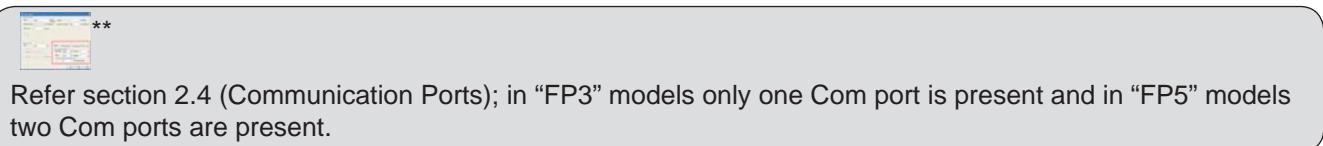
Unit can be configured in following ways:

1. For Serial Printing
2. For PLC Communication

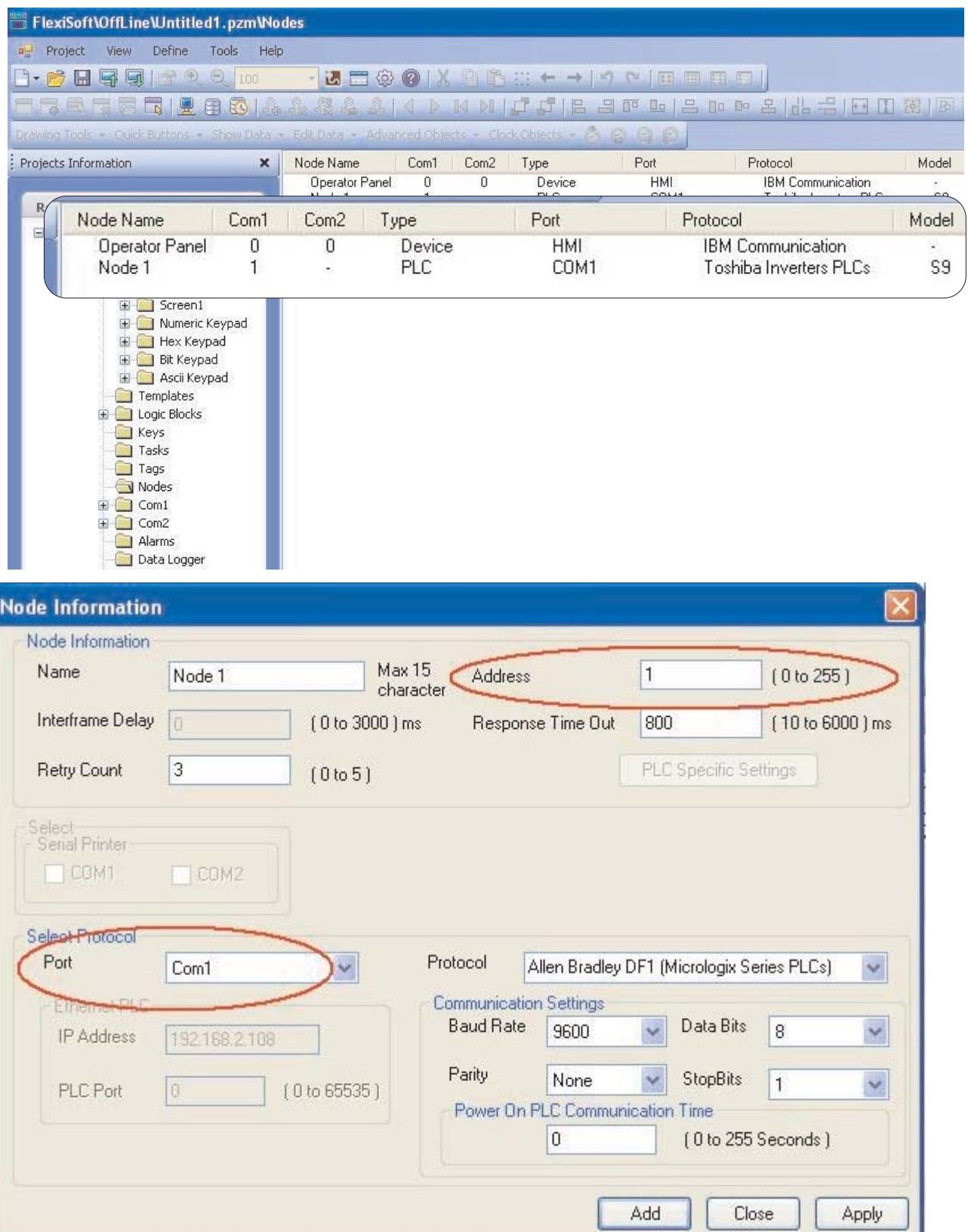
\*\*

Either of the ports can be configured for the ways mentioned above. Depending on the type of communication, the user may be required to define certain parameters.

The following screen displays the number of nodes connected on COM1, and COM2 with their node addresses, node name, node type (unit/PLC) and total number of blocks used in application.

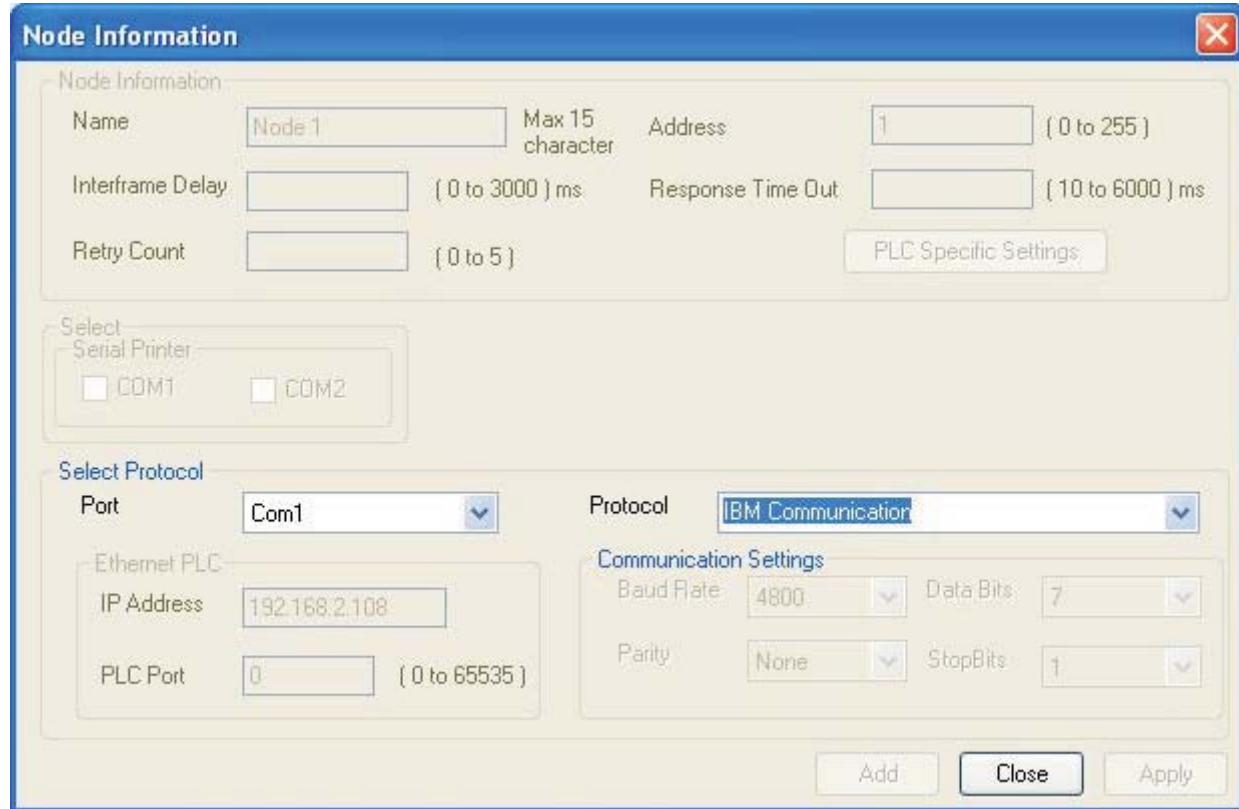


Refer section 2.4 (Communication Ports); in “FP3” models only one Com port is present and in “FP5” models two Com ports are present.



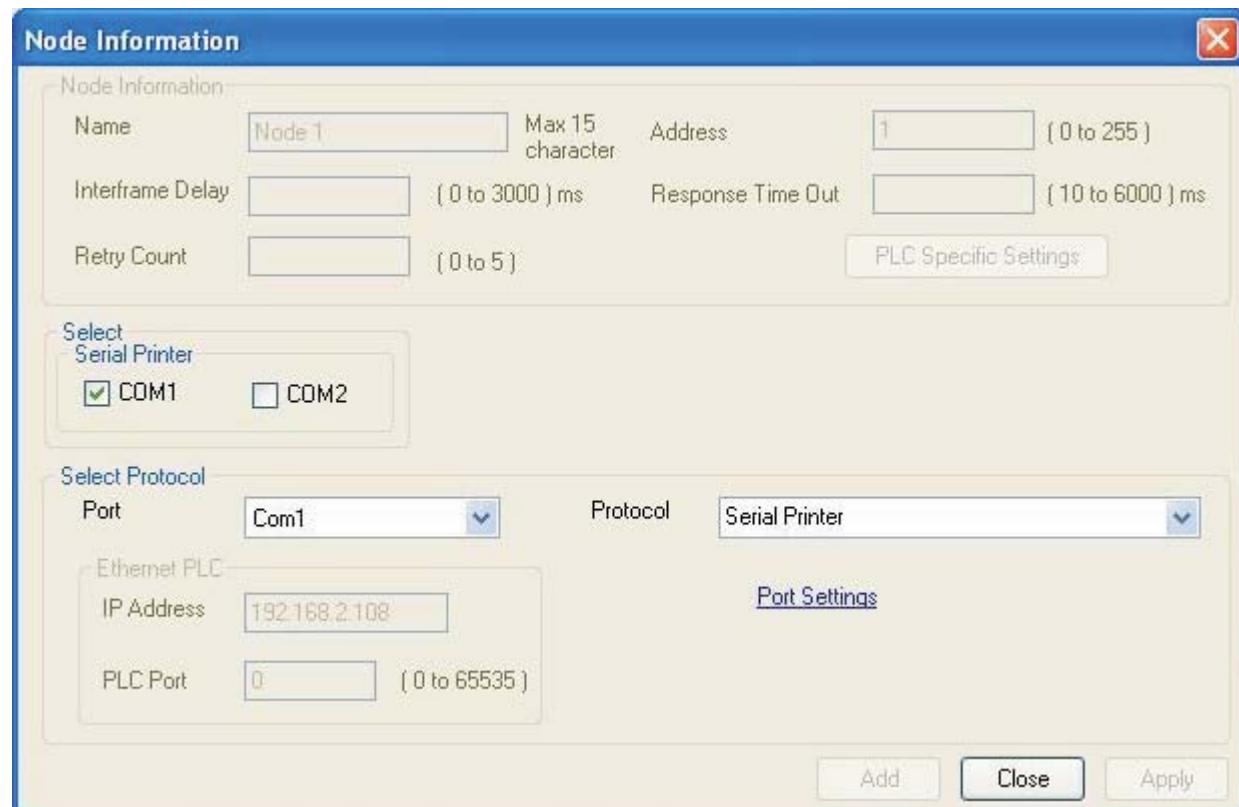
The FP HMI default unit address is 0 for COM1, COM2. If the default address of a PLC connected to COM1, COM2 is 0 then the FP HMI unit address must be changed to a nonzero number.

### 1. For IBM Communication:



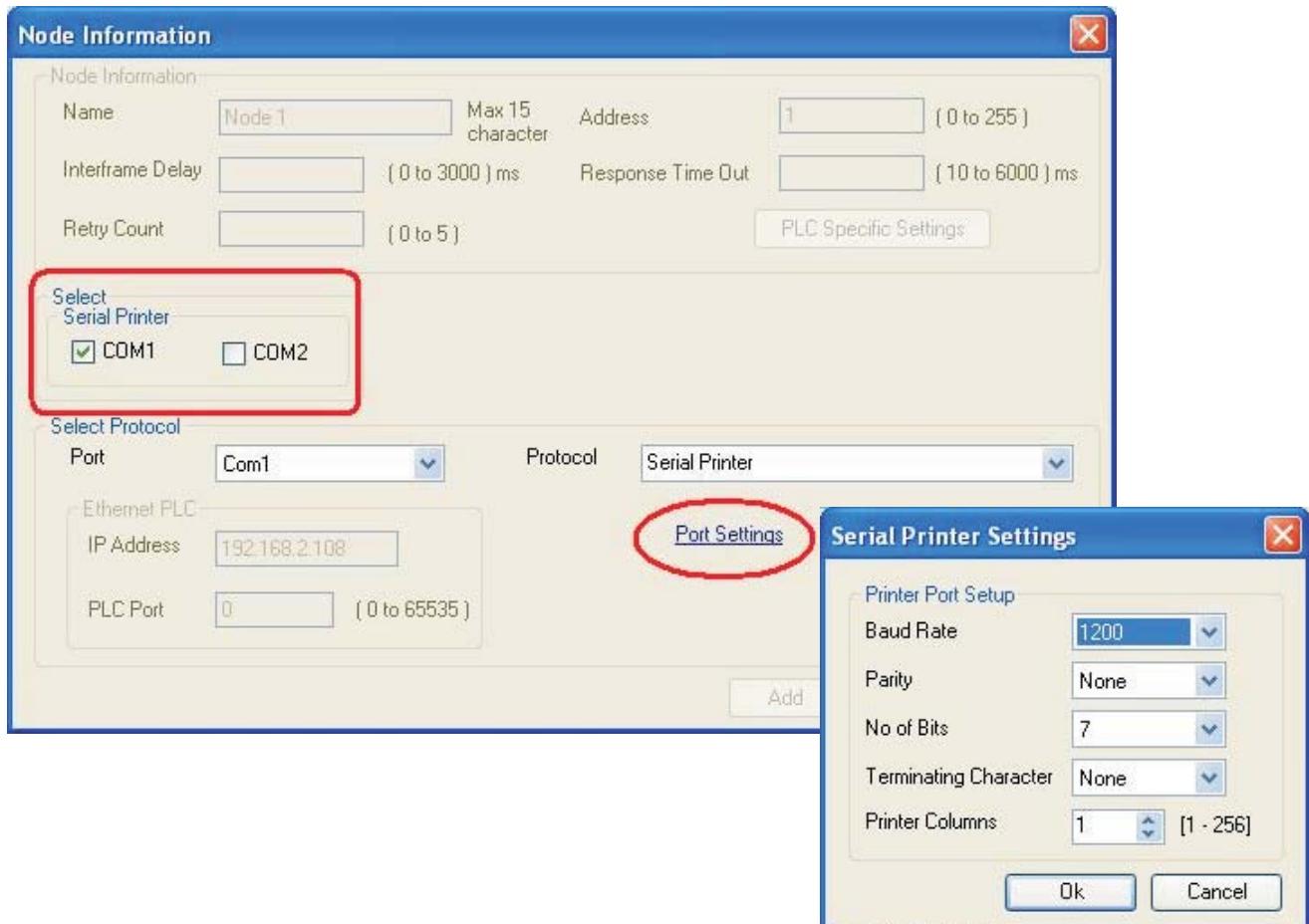
These are the default communication settings. If user wants IBM Communication, no other setting is required. In this case both communication ports can be used for downloading or uploading purpose.

### 2. For Serial Printing:



The user can use either of the ports for serial printing. This is done by selecting Protocol as "Serial Printer". In the above example, the user has configured COM1 for serial printing. However, when this port is not being used for printing, it can be used for IBM communication.

The user can change the serial printing parameters by selecting the "Port Settings" option. Before that you must select port option from "Select" window as shown below:



The following parameters can be modified for serial printing:

Baud Rate: Supported baud rates are 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K, and 187.5

Parity: Parity can be None, Even or Odd.

Number of bits: Number of bits can be 7 or 8.

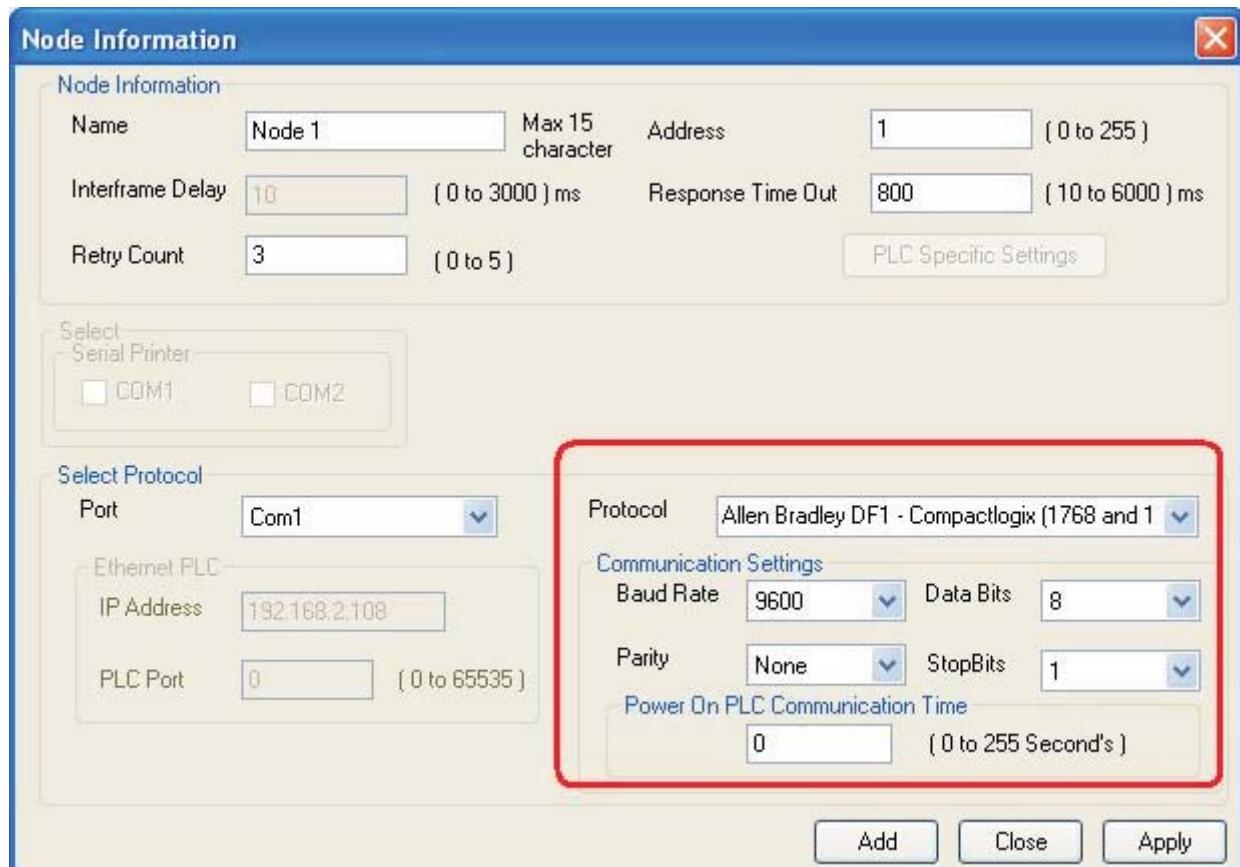
Number of Columns: Number of columns can be minimum 1 to maximum 256.

Terminating Character: Can be None, CR (Carriage Return), LF (Line Feed) or CR+LF.

Number of characters to print: Can be from minimum 1 to maximum 256.

Click "Ok" to set printer setting.

### 3. For PLC Communication:



**1. Protocol -** You can select desired PLC from the list of available drivers. In the example shown above, user has selected Allen Bradley DF1 at COM1.

**2. Port Settings -**

You can set PLC communication parameters like Baud Rate, Parity, Data Bits and Stop Bits. The PLC Communication parameters are:

- i. **Baud Rate:** Baud Rate is the measure of number of times per second a signal in a communication channel changes state. For ARGOS FP units, Baud rate are 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K, 187.5K.
- ii. **Parity:** Parity bit is included to check that data has been transmitted accurately. For FP units, Parity bits are None, Odd and Even.
- iii. **Data Bits:** Data bits are number of bits used to represent one character of data. For FP units, Data bits are either 7 or 8.
- iv. **Stop Bits:** Stop bits are inserted into the data frame to inform the receiving end that the transmission of byte of data is complete. For FP units, Stop bits are either 1 or 2.

**3. Address:** Enter a unique PLC node address ( 0 to 255)

**4. Name:** Specify a name for the node name up to 15 characters in length.

**5. Inter Frame Delay:**

Inter Frame Delay is the delay between the response received of last query and the next query that is to be transmitted.

**6. Response timeout:**

Response time out is the maximum time in which slave should respond to a master query. If slave does not respond to a master query within this time, the master will declare that the slave has been timed out.

**7. Retry Count:** Retrycount is the number of retry queries master will send to slave, if slave is timed out.

When all retries are finished, the master will declare a communication break and will show "!!!!".

**8. Add Node:** This will add the node to the network.

**9. Change Node:** The user can change PLC or PLC related information. This is done by highlighting the node, changing the information and finally clicking the button 'Change a Node'.

## **WORKSPACE TOUR**

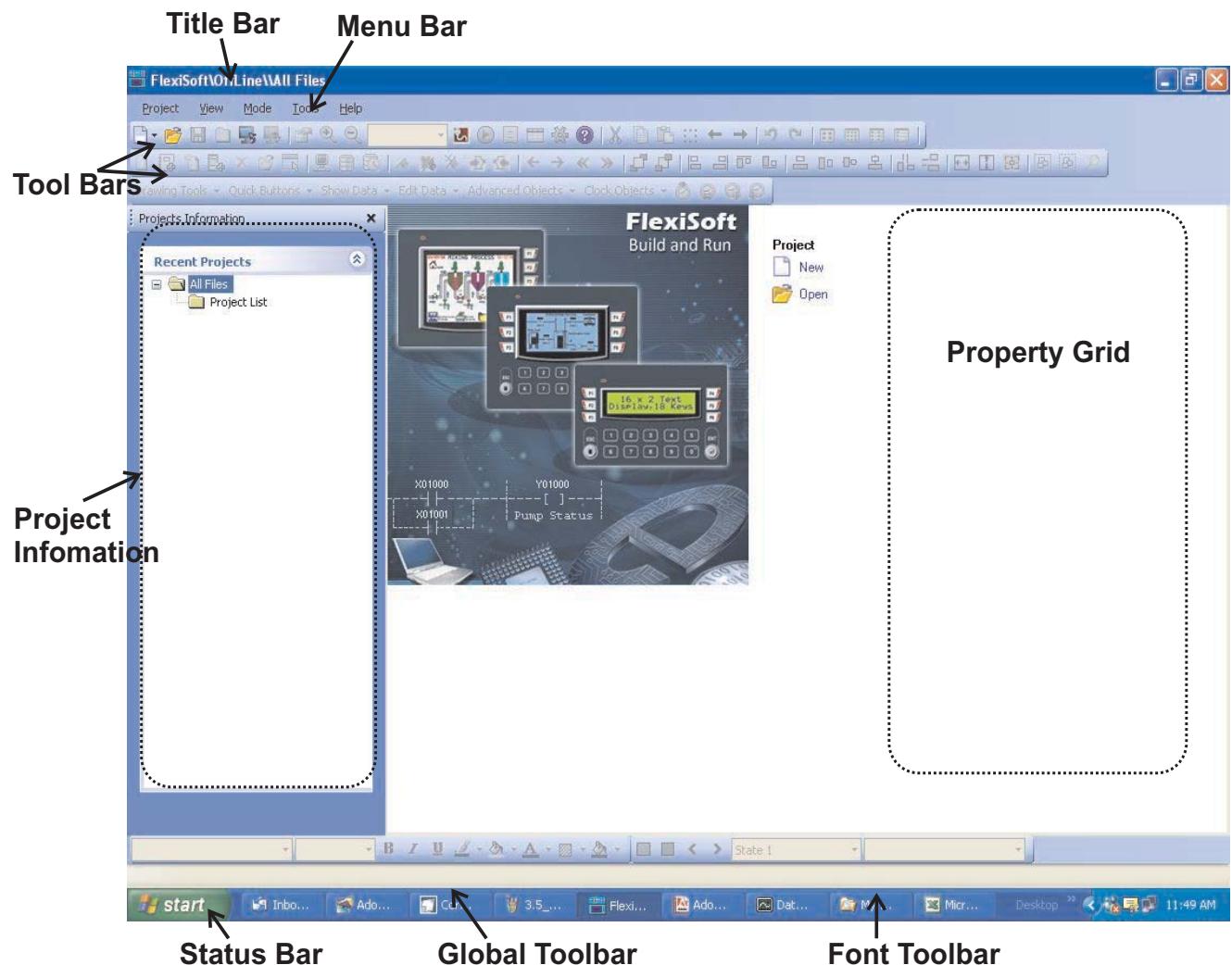
In this chapter. . . .

- \* FlexiSoft configuration software application window
- \* Standard toolbar
- \* Creating New Project
- \* Tag Database

#### 4.1 FlexiSoft Configuration software application window

When you launch FlexiSoft Configuration software, the application window opens with standard toolbars and working platform. The rectangle in the center of the window is the working space where you create your application. Although more than one drawing window can be opened, you can apply commands to the active drawing window only.

The FlexiSoft configuration software application window appears below. A description of its parts follows:

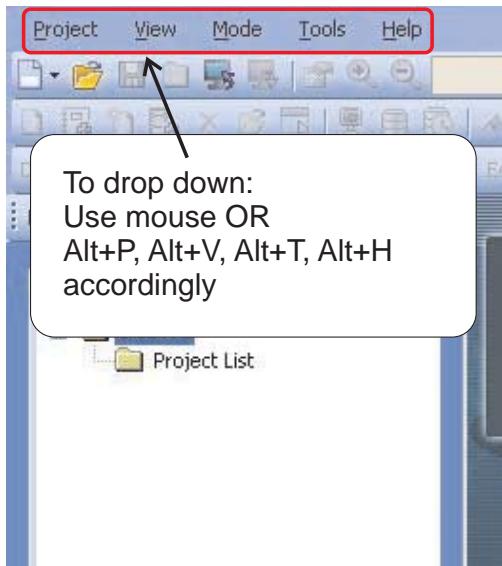


Part	Description
Menu bar	The area containing pull-down menu options
Toolbar	A detachable bar that contains shortcuts to menu and other commands
Title bar	The area displaying the title of the currently open drawing
Status bar	An area at the bottom of the application window that contains information about current running application e.g. current menu string OR if mouse is on application screen; this will show current operation property
Project Information	An area at the left of the application window that contains information of the application going on.
Property Grid	An area at the right side of the application window which appears after clicking on screen or working with object. This is a navigator for creating screen application.

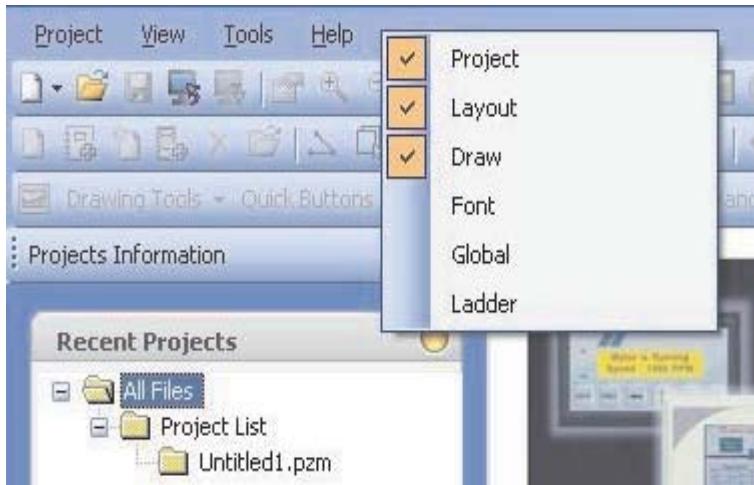
#### 4.1.1 Menu Bar

The menu bar operates like any standard Windows Menu bar. To open a particular Menu, click it with the mouse or use key along with the ALT key. When no application is opened, the menu bar shown above will be displayed.

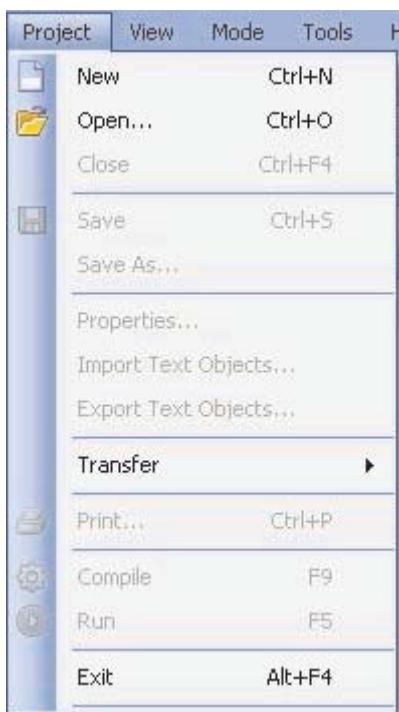
Here we can select either create new project or Open project.



These can be achieved by right clicking on “toolbar”.



#### 4.1.2 Project Menu



Click this button

To

	Start a new application
	Open a application
Close Ctrl+F4	Close a application
	Save a application
Save As...	Save a application with different name.
Properties... F4	Open a project configuration window , where user can report details about the project
Import Text Objects...	Import a text data associated with the wizards (on/off text,labels etc.)
Export Text Objects...	Export a data from FP projects and put it into a user specified file.
Transfer ▾	Download a application project from FlexiSoft Software to the unit. Upload a application project from unit to PC FlexiSoft Software.
Print... Ctrl+P	Print a current application information such as Project information, Unit settings, FP nodes,tags, screens, application tasklist, screen tasklist, alarms either by selecting 'All' or selecting specific attributes.
	Compile a application project with Warning or Error message
Run F5	Simulate a application project.
Exit Alt+F4	Exit from FlexiSoft Software.

### 4.1.3 View Menu



Click this button

To

Data Monitor Window

F10

To view device data or to initialize unit memory data

Device Information

To detect the information such as model name, bootblock, H/W, F/W versions of the base and expansion models as well as can upgrade firmware of expansion models.

Icons

Shows screen previews.

Lists

Shows all available screen list.

Details

Shows screen details

Arrange By

Arranged screen list by numbers or name or destination or type or task & or by description

Screen Information

Gives screen information in terms of name, type, no of objects present, task etc.

Errors and Warnings

After compilation, if error occurs, gives details of the error.

Refresh

Refresh the contents of the screen.

Projects Information

Shows "Project Information" explorer to the left side of the application window.

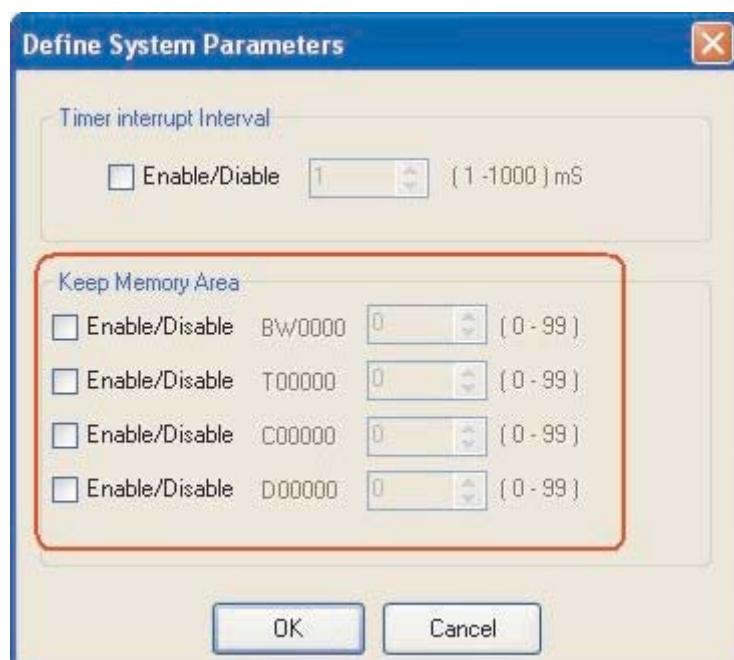
#### 4.1.4 Define Menu



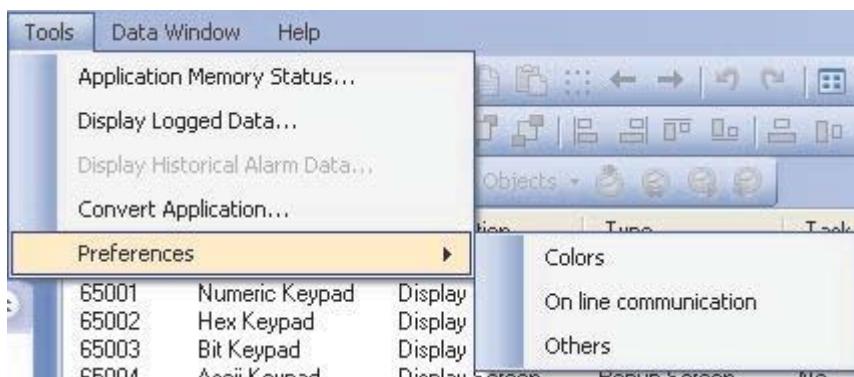
Click this button

To

- |                   |   |
|-------------------|---|
| Data Logger       | To switch to data logger setting parameter window   |
| Global Keys       | To switch to Global Key's Tasks.  |
| Nodes             | To switch to "Node" section   |
| Tag Database      | To switch to list of all Tags present in the project  |
| Alarm Database    | To switch to "Alalarm Project Configuration Properties" window  |
| Languages         | To switch to "Languages" section from "Project Information" explorer.   |
| System parameters | To launch "Define System Parameters" window. Here "Keep Memory Area" is seen. This is user defined Memory Area which is retained even after Power Cycle. User can declare specific registers from List of Device registers provided under system parameter List as keep Memory. Addition of BW, T, C and D should not exceed 100. |



#### 4.1.5 Tools Menu



Click this button

To

Application Memory Status...

Displays memory status (memory distribution)

Display Logged Data...

Displays total logger memory allotted by user for data logging

Display Historical Alarm Data...

Displays number of alarms stored in history

Convert Application...

Convert application of lower version product to the higher version product or similar



It defines ladder editor global settings (once set, it applies to opened projects)

#### 4.1.6 Help Menu



Click this button

To

Contents

Display a table of content of help file

Index

Display a index of help file

Search

Display a search of content of help file

About...

Display copyrite message with version and version date of the configuration software

## 4.2 Exploring toolbars

### 4.2.1 Project Toolbar



Tools



Tool Description

- The **NewProject** tool lets you start with new application
- The **Open** tool lets you open a saved / already created application
- The **Save** tool lets you save a running application
- The **Upload** tool lets you upload an application project from unit to PC FlexiSoft Software
- The **Download** tool lets you upload an application project from PC FlexiSoft Software to unit.
- The **Toggle Properties** tool lets you hide or un-hide the Screen Properties that appears on the right side of the configuration software window
- The **Zoom In Screen** tools lets you increase the magnification level in the running window
- The **Zoom Out Screen** tools lets you decrease the magnification level in the running window
- The **Zoom Factor (%)** tools lets you set a zoom level
- The **Run** tool lets you simulate a application project
- The **Compile** tool lets you compile a application project with Warning or Error message
- The **Help** tool lets you run a help file induced in setup software
- The **Refresh** tool lets you refresh the objects from running window
- The **Cut** tool lets you cut selected object/s to the clipboard
- The **Copy** tool lets you copy selected object/s to the clipboard
- The **Paste** tool lets you paste the Clipboard contents on a screen
- The **Previous Object** tool lets you select the last selcted/modified/created object on screen
- The **Next Object** tool lets you select the next modified/created object on screen
- The **Undo** tool lets you undo an action
- The **Redo** tool lets you restore an action that was undone
- The **Large Icons** tool lets you showed the screen in large thumbnail format
- The **Small Icons** tool lets you showed the screen in small thumbnail format
- The **List** tool lets you display a list of screens available in running application
- The **Details** tool lets you display a list of screens with preview available in running application

#### 4.2.2 Layout Toolbar



Tools

Tool Description

- |  |   |
|--|---|
|  | The <b>Selector</b> tool lets you select and size objects   |
|  | The <b>New Base Screen</b> tool lets you open a blank new screen for creating application                                 |
|  | The <b>New Popup Screen</b> tool lets you open a new popup (particularly sized window) screen                             |
|  | The <b>Delete Screen</b> tool lets you delete the selected screen   |
|  | The <b>Open</b> tool lets you open a desire screen from a docker window which lists the screens along with screen preview |
|  | The <b>Open</b> tool lets you switch to “Nodes” docker of application where you can add / delete / edit the tags          |
|  | The <b>Show Screen</b> tool lets you display all the screens on application window  |
|  | The <b>Tag Database</b> tools lets you open a list of tags used in application  |
|  | The <b>Alarm Database</b> tools lets you open a list of alarm tags used in application                                    |
|  | The <b>Add Bookmark</b> tools lets you define a particular screen/s as a bookmark   |
|  | The <b>Clear Bookmark</b> tools lets you clear the bookmark defined to screen   |
|  | The <b>Clear All Book Marks</b> tools lets you clear all the defined bookmarks in the application                         |
|  | The <b>Next Bookmark</b> tools lets you switch to next bookmarked screen directly   |
|  | The <b>Previous Bookmark</b> tools lets you switch to previous bookmarked screen directly                                 |
|  | The <b>Next Screen</b> tools lets you switch to next screen from working screen   |
|  | The <b>Previous Screen</b> tools lets you switch to previous screen from working screen                                   |
|  | The <b>First Screen</b> tools lets you switch to first screen   |
|  | The <b>Last Screen</b> tools lets you switch to last screen   |
|  | The <b>Bring To Front</b> tools lets you move the selected object to the front of all other objects                       |
|  | The <b>Bring To Back</b> tools lets you move the selected object to the behind of all other objects                       |
|  | The <b>Align Left</b> tools lets you align the active objects left with respect to left most point of object              |
|  | The <b>Align Right</b> tools lets you align the active objects right with respect to right most point of object           |
|  | The <b>Align Top</b> tools lets you align the active objects top with respect to top most point of object                 |
|  | The <b>Align Bottom</b> tools lets you align the active objects bottom with respect to bottom most point of object        |

-  The **Align Middle Horizontal** tools lets you align the centers of active objects to screen horizontally
-  The **Align Middle Vertical** tools lets you align the centers of active objects to screen vertically
-  The **Align middle horizontal wrt shape** tool lets you align the centers of active objects horizontally
-  The **Align middle vertical wrt shape** tool lets you align the centers of active objects vertically
-  The **Place Equal Horizontal** tool lets you equal the width between all active objects
-  The **Place Equal Vertical** tool lets you equal the vertical distance between all active objects
-  The **Make Equal Width** tool lets you change a width of object equal to a first drawn object.
-  The **Make Equal Height** tool lets you change a height of object equal to a first drawn object.
-  The **Make Equal size** tool lets you change dimension (length x width) of object equal to a first drawn object
-  The **Make Group** tool lets you group the active objects and act as a single object
-  The **Break Group** tool lets you un-group the grouped objects and act as a separate object on screen

### 4.2.3 Draw Toolbar

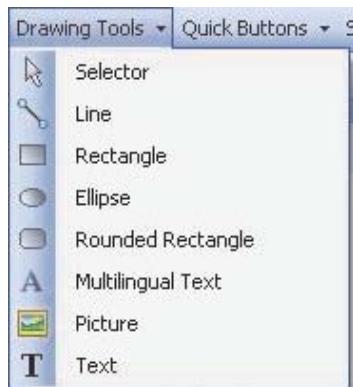
#### Tools

Flyouts open to display a set of related DRAW tools. A small arrow in the middle, right corner of a toolbox button indicates a flyout

 Clicking and dragging the grab handles at the end of the flyout sets the flyout in its expanded form.

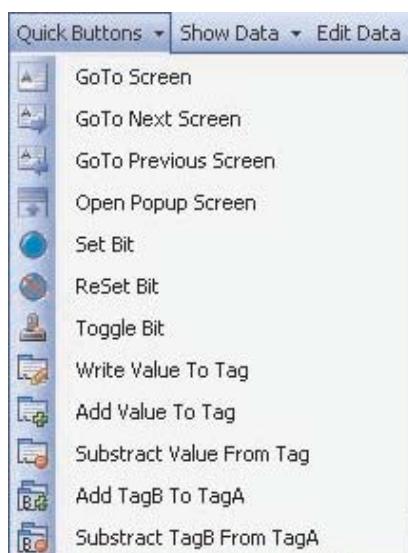
This toolbar is devided into various sub-catagories described as below:

#### Drawing Tools:



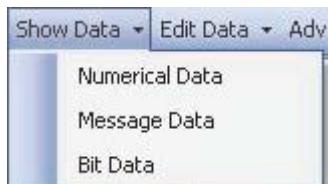
Tool	Description
	The <b>Selector</b> tool lets you select an object
	The <b>Line</b> tool lets you draw a line
	The <b>Rectangle</b> tool lets you draw a filled rectangle
	The <b>Ellipse</b> tool lets you draw a ellipse
	The <b>Multilingual Text</b> tool lets you enable text box
	The <b>Picture</b> tool lets you insert a picture from the defined destination
	The <b>Text</b> tool lets you type a word

#### Quick Buttons:



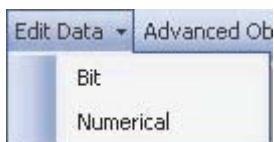
-  The **GoToScreen** tool lets you jump to any available screen from list of screens
-  The **Go To Next Screen** tool lets you jump to next available screen
-  The **Go To Previous Screen** tool lets you jump to previous available screen
-  The **Open popup Screen Button** tool lets you open a selected screen from available popup screen in touch screen products only
-  The **Set Bit Button** tool lets you switch the PLC coil or register bit to on state
-  The **Reset Bit Button** tool lets you switch the PLC coil or register bit to off state
-  The **Toggle Bit Button** tool lets you toggle a state of PLC coil (read/write) or register bit (read/write).
-  The **Write Value To Tag Button** tool lets you write a constant value to a tag
-  The **Add Value To Tag Button** tool lets you add a constant value to the current value of the tag
-  The **Subtract Value From Tag Button** tool lets you subtract a constant value from the current value of a tag
-  The **Add TagB To TagA Button** tool lets you add two PLC tags
-  The **Subtract TagB From TagA Button** tool lets you subtract two PLC tag

### Show Data:

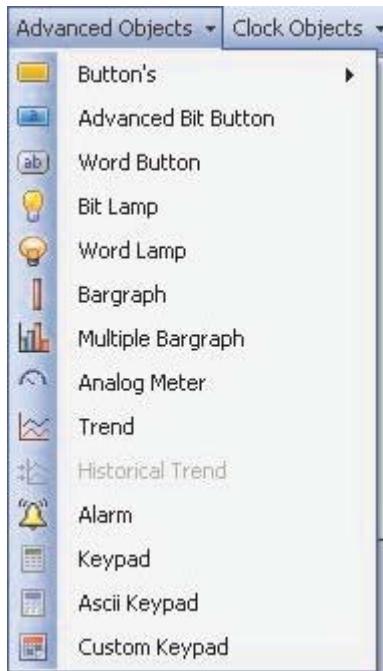


-  The **Numerical Data** displays only numeric data register value. (Can't be editable)
-  The **Message Data** displays only text data register value. (Can't be editable)
-  The **Bit Data** displays only bit text data register value. (Can't be editable)

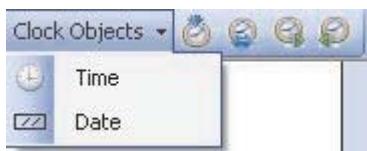
### Edit Data:



-  The **Bit** can edit bit data
-  The **Numerical** can edit numeric data register value.

**Advanced Objects:**

Tools	Description
	The <b>Advanced Bit Button</b> displays wizard having list of various pre-defined tasks & can be performed through it.
	The <b>Word Button</b> displays multiple states and perform respective multiple tasks action on different value ranges os a single numeric tag.
	The <b>Bit Lamp</b> displays ON state and OFF state of a coil type tag.
	The <b>Word Lamp</b> displays multiple states of different value ranges of a single numerical tag
	The <b>Bargraph</b> lets you change bar height and width according to the value in the register
	The <b>Multiple Bargraph</b> lets you change bar height and width according to the value in the register (upto 4) simultaneously
	The <b>Analog Meter</b> lets you represent the parameter values viz.: temperature or pressure from FP unit or PLC tag
	The <b>Trend</b> displays a graphical representation of a tag's value
	The <b>Historical Trend</b> displays a graphical representation of a tag's value
	The <b>Alarm</b> lets you define alarms in the application
	The <b>Keypad</b> lets you enter the data in a touch screen product
	The <b>ASCII Keypad</b> lets you enter the data in ASCII format
	The <b>Custom Keypad</b> lets you set

**Clock Objects & Alarms:**

Tools	Description
	The <b>Time</b> tool lets you display system time
	The <b>Date</b> tool lets you display system date
	The <b>Alarm acknowledge</b> tool lets you acknowledge the top alarm displayed in Display Alarm object. Provided any particular / all alarms are not set / defined to be acknowledged by any specific bit in Alarm Configurator Dialog
	The <b>Acknowledge All</b> tool lets you acknowledge all alarms at a time from display Alarm object. Provided any particular / all alarms are not set / defined to be acknowledged by any specific bit in Alarm Configurator Dialog
	The <b>Next Alarm</b> tool lets you to switch to next alarm from list of the alarms displayed in Alarm Display Window
	The <b>Previous Alarm</b> tool lets you to switch to previous alarm from list of the alarms displayed in Alarm Display Window

#### 4.2.4 Font Toolbar



Tool	Description
	The <b>Font List</b> tool lets you define a text style (i.e. font type). For example, you can create a text style that applies a AvantGrade Bk BT font.
	The <b>Font Size List</b> tool lets you define a text style (i.e. font size). For example, you can create a text style that applies a 36 point font size.
<b>B</b>	The <b>Bold</b> tool lets you change an appearance of a font from normal to bold
<b>I</b>	The <b>Italics</b> tool lets you change an appearance of a font from normal to <i>Italics</i>
<b>U</b>	The <b>Underline</b> tool lets you underline a defined font
	The <b>Line color</b> tool lets you change a color of a outline of a text box
	The <b>Fill Color</b> tool lets you change a background color of a textbox
	The <b>Font Color</b> tool lets you change a text color
	The <b>Pattern</b> tool lets you define a text style (i.e. fill pattern) For example, you can fill a text style with defined pattern
	The <b>Pattern Color</b> tool lets you define a text style (i.e. fill color pattern) For example, you change color of a text with filled pattern

#### 4.2.5 Global Toolbar



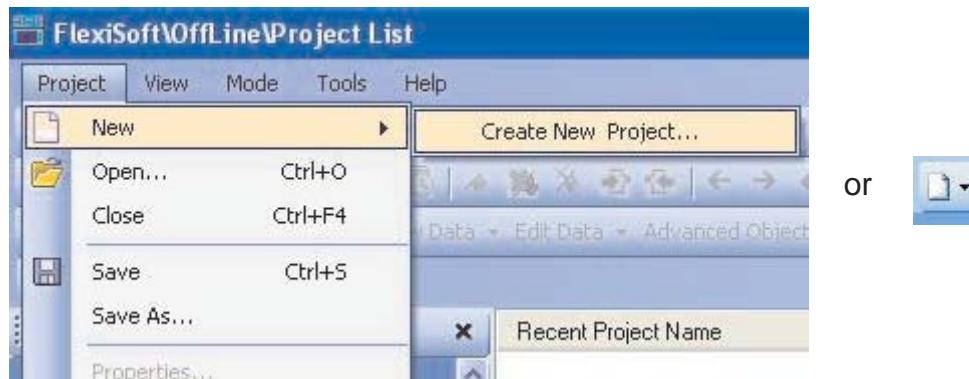
Tool	Description
	The <b>On State</b> tool lets you display the parameters of bit button defined in on status
	The <b>Off State</b> tool lets you display the parameters of bit button defined in off status
	The <b>Previous State</b> tool lets you jump to previous available state applicable for word button only
	The <b>Next State</b> tool lets you jump to next available state applicable for word button only
	The <b>State</b> tool lets you defined the current state of word buttons on the screen
	The <b>Language</b> tool lets you display the list of languages added in project

### 4.3 Creating New Project

You can create a new application either from “Project” menu bar or from tool bar.

Creating a new application from menu bar:

To create a new application either choose **Project->New** option or click on **New Application** icon as shown below:



or

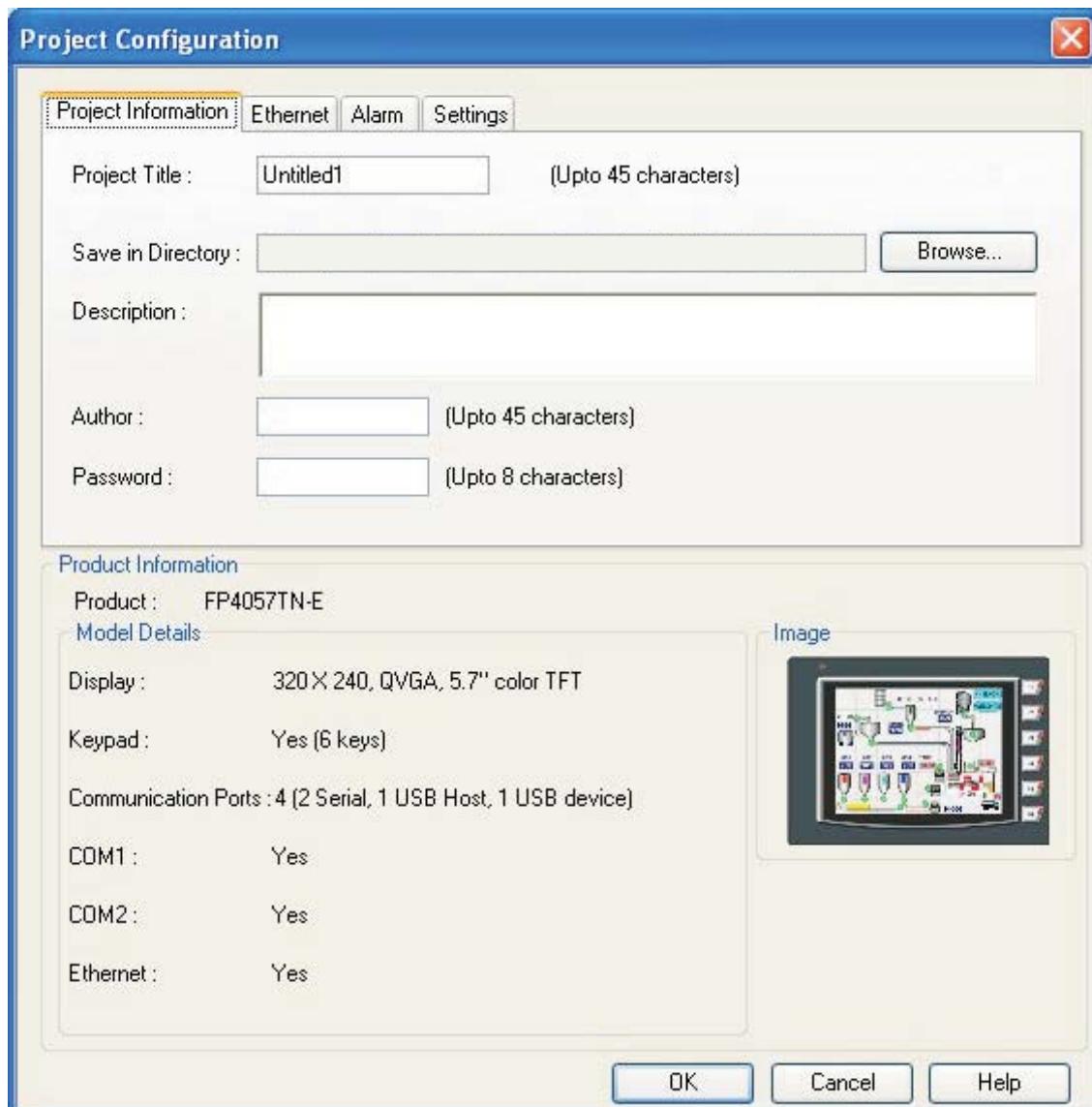


Following screen will appear:



This screen shows a list of all ARGOS FP models. Select the product to be programmed by clicking on the product part in the list. Then respective models will appear in the following string. Choose the model.

On clicking “Ok” button project configuration screen will appear as shown below:



#### Steps for creating a new application are as follows:

- 1) Start a new project using either Project Menu or Tool section NewProject command.
- 2) Define unit's settings from Project configuration docker window.
- 3) Define Network Configuration for selected unit and PLCs.
- 4) Define tags required for the application in the Tag Database.
- 5) Define screens.
- 6) Define Power-on, Global and Screen tasks.
- 7) Save your application.
- 8) Download firmware to the unit.
- 9) Download your application into the unit.

#### 4.4 Creating a sample project

This section explains you the creation of a sample project, once downloaded to the unit, this basic configuration allows the unit to connect to the PLC, display a startup screen, and display a screen containing one PLC register monitor when a switch on the startup screen is pressed.

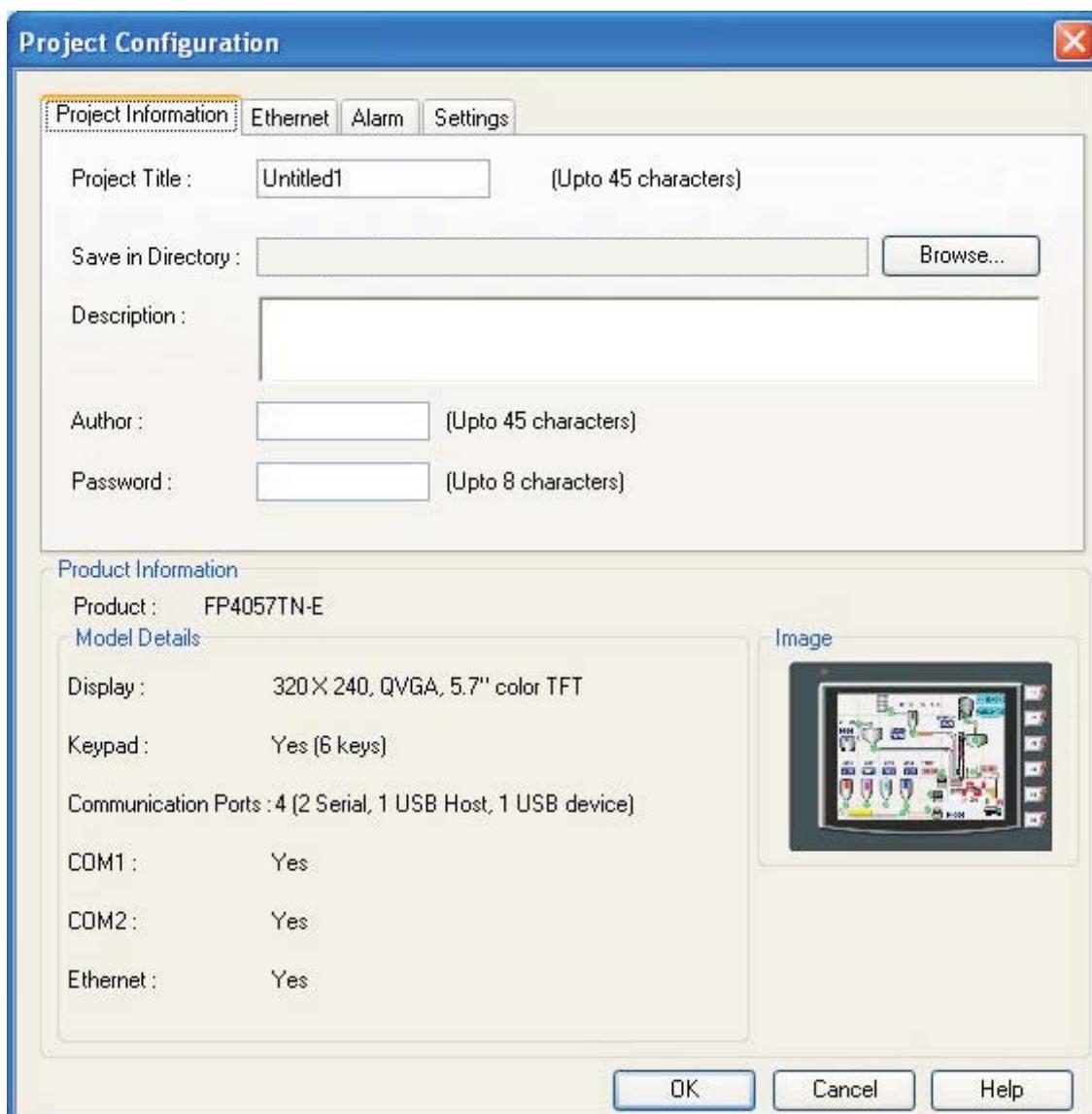
Although we strongly recommend that you perform the following steps to create this sample project.

Setting the system parameters:

Whenever you begin a new project, you should always set the system parameters before you creat any windows. System parameters define the basic operating conditions of the FP unit such as what type of PLC it is connecting to.

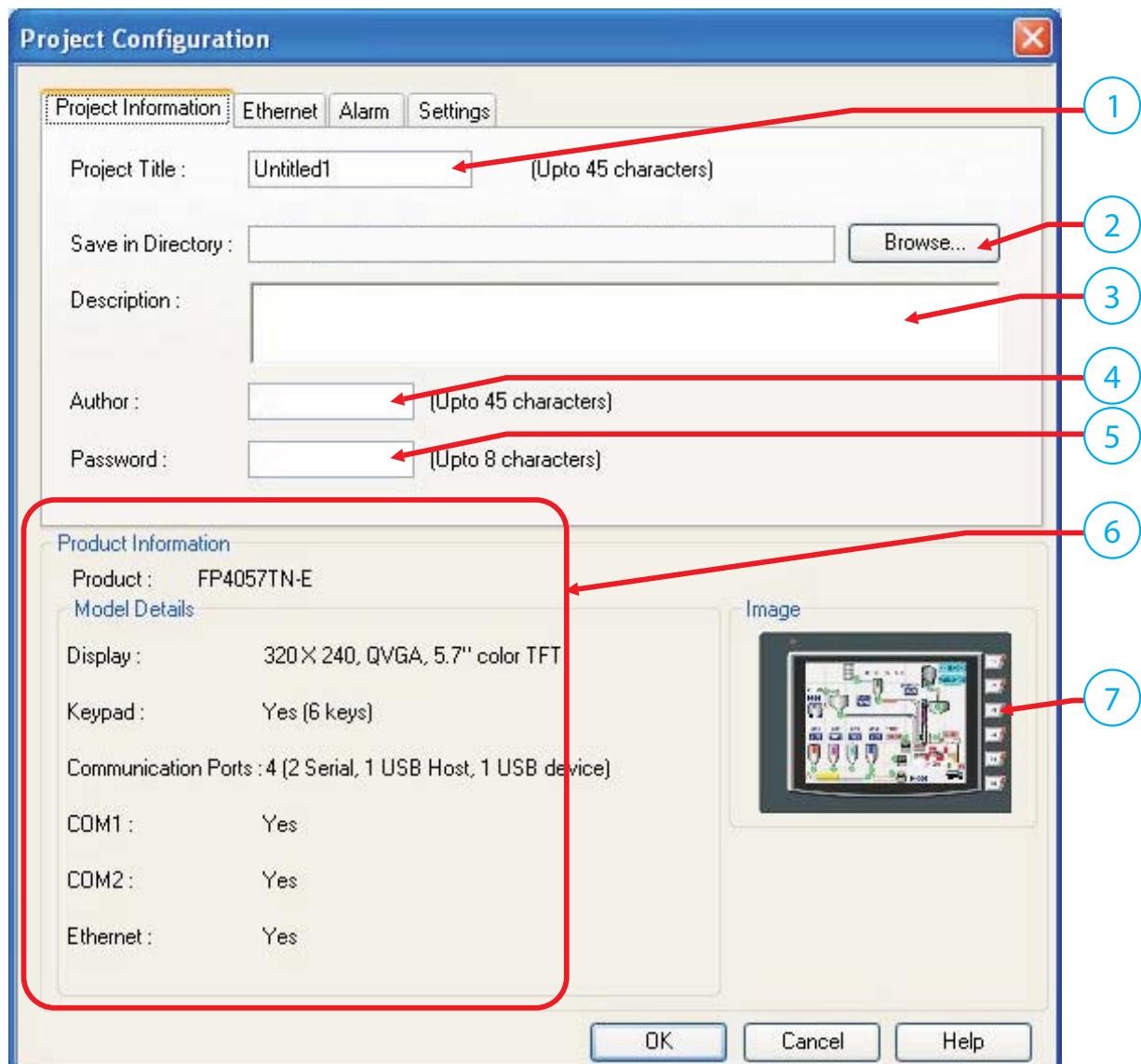
To edit system parameters:

1. Click the "NewProject" button. "Click "OK"; the "Project Configuration" dialog box appears.



2. The dialog box has five (5) tabs: Project Information, COM1, COM2, Ethernet, Expansion port, Alarm and, Settings. Select the **Project Information** tab.

*Note: The tabs "COM1", "COM2" and "Ethernet" will appear with respect to the unit you select from the list. These are optional & can appear in this dialog box when having compatibility in selected model.*



In this dialogue box section:

- Point 1: You can define project name or can keep "Untitle" as default.
- Point 2: You can define path for the project to be saved.
- Point 3: You can mention any special note; if required.
- Point 4: You can define author name.
- Point 5: You can define "password" for the project you created.
- Point 6: You can see the information of the model selected.
- Point 7: You can see the image of the model you selected.

*Note: Point 6 and 7 will appear with all tabs of "Project Configuration" docker.*

3. Set the parameters from "Alarm" and "Setting" tabs and press "OK" button.

You can see a application window listing information as Screens, nodes, tags and users.

After setting macro level parameters from these project items, your application is ready for downloading.

## 4.5 Ethernet Settings

If user selects the model with Ethernet port on it, then the Project Configuration" docker window will be as shown below:



**IP Address:** This is default IP address of the unit. If DHCP (Dynamic Host Configuration Protocol) server is not present in the network, this IP will get assigned to the unit. On the other hand, if DHCP server is present, unit will get the IP address assigned by the server, which will be displayed on unit at the power on and will also be copied to system tags.

**Download Port:** This is a port number on which unit's downloaded server will be configured. User should use this port number to download the functionality. Upload server will be automatically configured as Download Port number. Thus if download port number is 5000, then this port number will also be used for uploading.

*Note: The default port number 5000 is used in most of the cases. In some cases LAN can not be allowed the port number 5000, in that case user can edit this port number.*

**Subnet Mask:** Subnet mask should be filled according to the network configuration. **Default Gateway:** Default Gateway should be filled according to the network configuration.

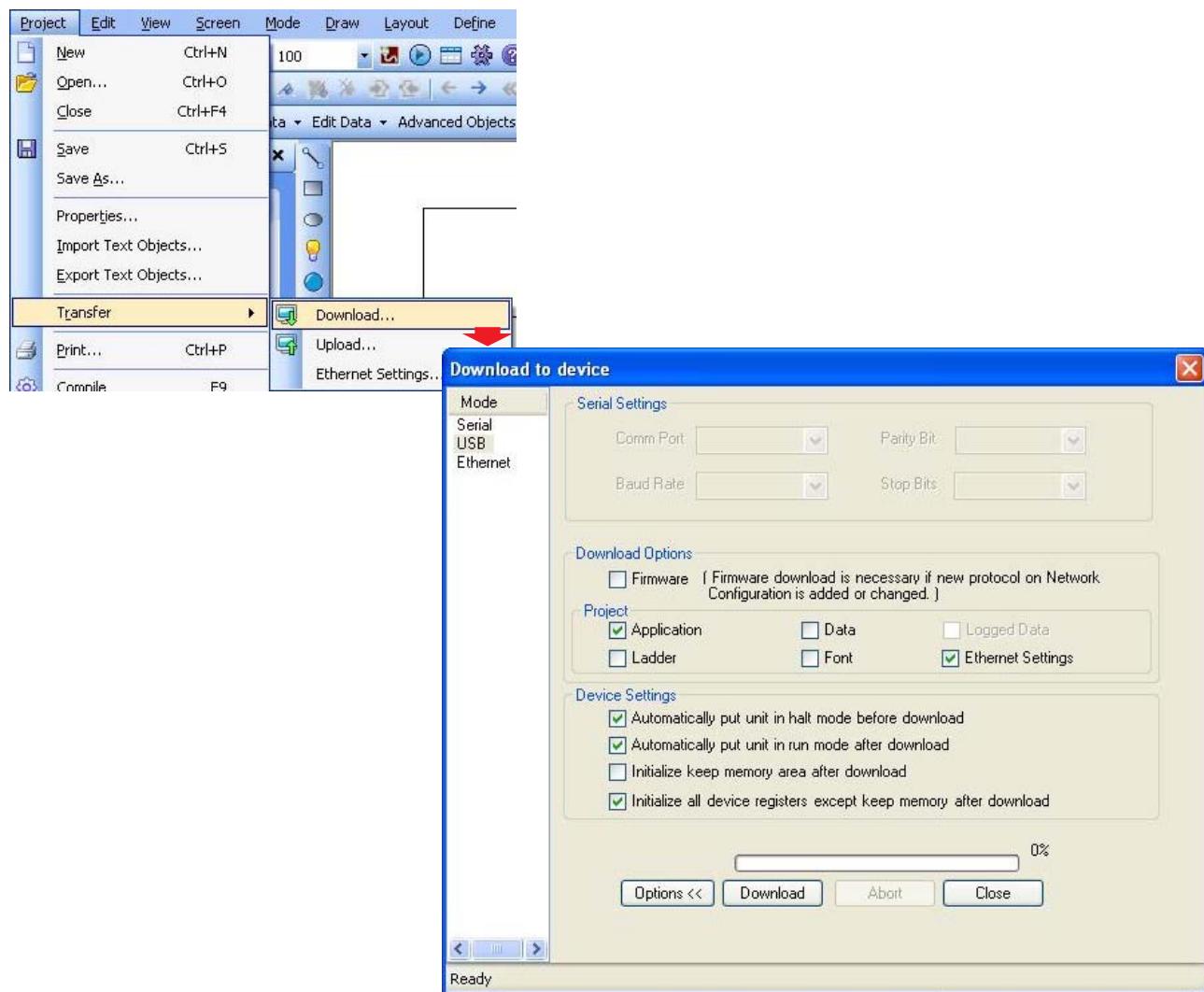
## Default Ethernet Settings for FP:

Field	Default Settings
IP Address	192.168.250.100
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0 (Unit will show message as "No Gateway address defined")

## Ethernet Settings Ranges:

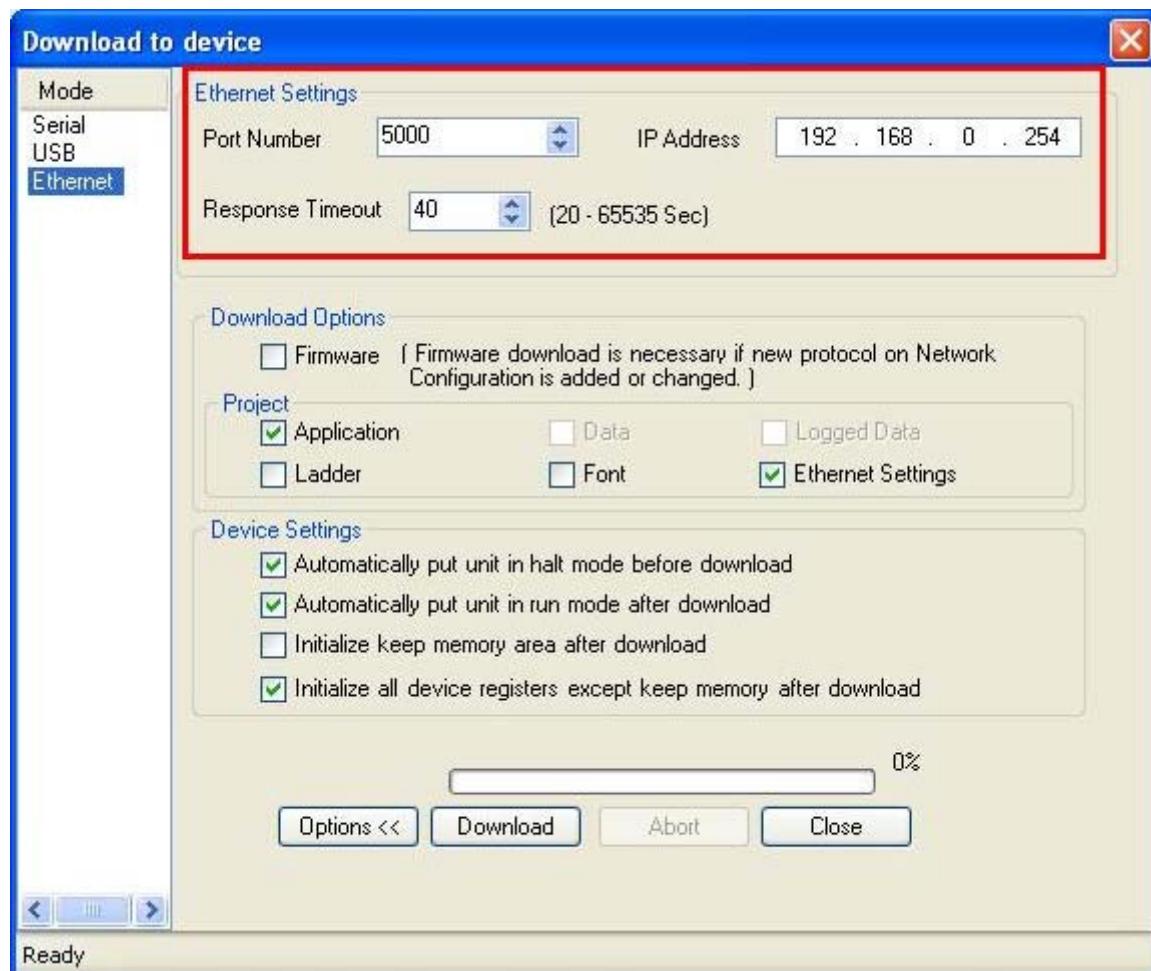
IP address	(1-254).(0-255).(0-255).(1-254)
Subnet Mask	(0-255).(0-255).(0-255).(0-255)
Default Gateway	(1-254).(0-255).(0-255).(1-254)

Here completes the ethernet settings for the unit. User can download these settings to the unit through any port i.e. USB, Serial or Ethernet as shown below:



While downloading, do not forget to enable "Ethernet Settings" option. These are the settings which user has already defined during configuring Ethernet Settings through "Project Configuration" window.

If user selects "Ethernet" port to download these settings, then, do not forget to define "Port Number" and "IP Address" of the unit.



## 4.6 Tag Database

This is the central database for the tags that need to be used in the application. Once the tags are defined (as register or coils) and their attributes selected, the tags can be used in the application on screens, tasks, alarms etc. This screen helps you to define Tags associated with defined Nodes. A tag is a register, coil or an individual bit of a register. Select the type of tag from the Tag Type field.

If the type of tag selected is a register then the number of bytes required can also be selected. For displaying or editing a floating point data number, the number of bytes must be 4. The Tag Name field is user definable. A tag is not added to the tag list unless a tag name is defined. Once these fields are defined, click on the Add button. The Block field in the tag database defines the starting address of the tag block followed by the block size.

For example : Tag M0214 is within a block ( M0214 : 1 ) whose starting address is M0214 and block size is 1.

This block size is optimized automatically depending on the address of PLC Tag.

Default block size is either 1 or 16. This setting varies from PLC to PLC.

The attributes of existing tag can be changed by highlighting the tag, making the changes, and clicking the Change Tag button. An existing tag can be removed from tag list by clicking on Delete Tag button. Note that removal of tags is possible only if they are not used in any screen.

Tag No	Tag Name	Port	Tag Address	Byte(s)
1	PLC mode control	Add...	/0000	2
2	Run/Stop switch control (retentive)	Edit...	/0003	2
3	Carry bit	Delete	0000	bit
4	High speed timer control bit		0001	bit
5	Minute change status		0003	bit
6	Hour change status		0004	bit
7	Date change status		0005	bit
8	Month change status		0006	bit
9	Year change status		0007	bit
10	Screen saver control		0008	bit
11	Beeper control		0009	bit
12	RTC battery status		0010	bit
13	Refresh historical trend		0012	bit
14	Acknowledge all alarms		0014	bit
15	Valid key beeper control		S00016	bit
16	Invalid key beeper control		S00017	bit
17	Invalid RTC date entry		S00019	bit
18	Popup screen trigger		S00020	bit
19	COM1; failed node reconnect control		S00021	bit

**Add** - Use this button to add a tag. After clicking this button, the user has to define the following:

1. Node : Where the tag is located.
2. Register, coil or a bit within a register. Registers can be read only or read/write.
3. The address limits are shown and vary from PLC model to model.
4. Tag name : Each tag needs to have a unique name. The name can be up to 40 characters in length.
5. Byte(s) : If the selected tag is a register, the tag can be defined as a 1 byte ( either high or low byte), a 2 byte, or a 4 byte tag.

**Edit** – Select the tag. Edit the information and then click on the Update button.

**Delete** - Select the tag and click on Delete button to delete the tag. Before deleting any tag, the user must delete any references to the tag in screens and tasks. Otherwise it can not be deleted.

**Default System Tags**

Note: Please do not attempt to modify read only system tags in the ladder. This could affect the functionality of the product.

System Registers:

Register / Coil	Tag Name	Read / Write	Description
SW0001	Language	Read / Write	Writing a value will changes languages used in wizards
SW0002	Logger Memory % Usage	Read only	Shows percentage use of logger memory. (0 to 100)
SW0003_00	Logger Memory full Status	Read only	1 = Memory full
SW0003_01	Logger Memory clear Status	Read only	1 = Memory clear routing being executed
SW0003_02	RTC Status	Read only	RTC fail
SW0003_13	COM3 Status	Read only	0 = Communication Error; 1= Communicating with PLC
SW0003_14	COM1 Status	Read only	0 = Communication Error; 1= Communicating with PLC
SW0003_15	COM2 Status	Read only	0 = Communication Error; 1= Communicating with PLC
SW0004	Historical Alarm count	Read only	Shows no of alarm stored in history
SW0005	Screen Trigger Register	Read / Write	Shows active screen no. You can change screen by writing any valid screen no in this register
SW0006	Screen saver time	Read / Write	You can change screen time in run time
SW0007_00	RTC Battery Status	Read only	Indicates battery voltage in #.# format
SW0008	IP Conflict Status Register	Read only	If there is an IP Conflict, then 1 is written to this register. If there is no IP conflict then by default it is zero.
SW0009	Driver Scan time register for port3		Shows time required to execute Screen blocks for port3 in milliseconds. Use #####.# format for display.
SW0010	RTC Day of Month	Read only	RTC day in integer format
SW0011	RTC Month	Read only	RTC month in integer format
SW0012	RTC Year	Read only	RTC year in integer format
SW0013	RTC Hour	Read only	RTC hour in integer format
SW0014	RTC Min	Read only	RTC minute in integer format
SW0015	RTC Sec	Read only	RTC sec in integer format
SW0016	RTC Day of week	Read only	RTC Day of week in integer format
SW0017	Scan time register	Read only	Shows time required to execute Screen, Screen task and global task in millisecond Use #####.# format for display
SW0018	COM1 failed node reconnect time (Sec)	Read / write	Shows time in sec recover the communication with failed nodes for port1.the default value is 60Sec
SW0019	COM2 failed node reconnect time (Sec)	Read / write	Shows time in sec recover the communication with failed nodes for port1.the default value is 60Sec
SW0020	Driver Scan time register for port1	Read only	Shows time required to execute Screen blocks in milliseconds. Use #####.# format for display
SW0021	Driver Scan time register for port2	Read only	Shows time required to execute Screen blocks in milliseconds. Use #####.# format for display
SW0022	COM3 failed node reconnect time (Sec)	Read / write	Shows time in sec recover the communication with failed nodes for port3.the default value is 60 Sec
SW0023	Popup Screen number	Read / Write	Value stored in this register triggers the popup screen on s20 bit

Register / Coil	Tag Name	Read / Write	Description
SW0024	Status Word1 for Siemens micromaster	Read	Displays the status word1 of the drive
SW0025	Status Word2 for Siemens micromaster	Read	Displays the status word2 of the drive
SW0026	Control Word1 for Siemens micromaster	Read / Write	Displays the Control word1 of the drive
SW0027	Control Word2 for Siemens micromaster	Read / Write	Displays the Control word2 of the drive
SW0028 (LOW)	HMI IP Address(LS BYTE)	Read Only	IP ADDRESS least significant byte
SW0028 (HIGH)	HMI IP Address(2nd BYTE)	Read Only	IP ADDRESS second byte
SW0029 (LOW)	HMI IP Address(3rd BYTE)	Read Only	IP ADDRESS Third byte
SW0029 (HIGH)	HMI IP Address(MS BYTE)	Read Only	IP ADDRESS most significant byte
SW0030 (LOW)	HMI Subnet Mask(LS BYTE)	Read Only	Subnet Mask least significant byte
SW0030 (HIGH)	HMI Subnet Mask(2nd BYTE)	Read Only	Subnet Mask second byte
SW0031 (LOW)	HMI Subnet Mask(3rd BYTE)	Read Only	Subnet Mask Third byte
SW0031 (HIGH)	HMI Subnet Mask(MS BYTE)	Read Only	Subnet Mask most significant byte
SW0032 (LOW)	HMI Default Gateway (LS BYTE)	Read Only	Default Gateway least significant byte
SW0032 (HIGH)	HMI Default Gateway (2nd BYTE)	Read Only	Default Gateway second byte
SW0033 (LOW)	HMI Default Gateway (3rd BYTE)	Read Only	Default Gateway Third byte
SW0033 (HIGH)	HMI Default Gateway (MS BYTE)	Read Only	Default Gateway most significant byte
SW0034	HMI download Port	Read Only	HMI download Port
SW044	IO Interrupt 1 Ladder	Read Only	Value is multiple of 0.1
SW045	Execution Time IO Interrupt 2 Ladder	Read only	Value is multiple of 0.1
SW046	Execution Time Ladder Scan Time	Read only	Value is multiple of 0.1 mSec
SW047	Timer interrupt ladder execution time	Read Only	Value is multiple of 0.1 mSec
SW0048	S48 (Ana Type selection)	Read / Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
SW0060	S60( room Temp)	Read / Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
SW0062	S62 (Out Ch Select)	Read / Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
SW0063	S63 (In)ChSelect)	Read / Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
SW64-S65	Node Status Registers for COM1	Read only	Shows the status of the node, whether node is present or not. Total 2 word Register are mapped for 32 nodes.
SW66-S79	Node Status Registers for COM1	Read only	Shows the status of the node, whether node is present or not. Total 14 word Register are mapped for 224 nodes.
SW80-S81	Node Status Registers for COM2	Read only	Shows the status of the node, whether node is present or not. Total 2 word Register are mapped for 32 nodes.
SW82-S95	Node Status Registers for COM2	Read only	Shows the status of the node, whether node is present or not. Total 14 word Register are mapped for 224 nodes.
SW96-S111	Node Status Registers for COM3	Read only	Shows the status of the node, whether node is present or not. Total 16 word Register are mapped for 256 nodes.
SW116	Factory Application 1	Read / Write	Reserved for factory application
SW117	Factory Application 2	Read / Write	Reserved for factory application

SW118	Factory Application 3	Read / Write	Reserved for factory application
SW119	Factory Application 4	Read / Write	Reserved for factory application
SW120	Factory Application 5	Read / Write	Reserved for factory application
SW121	Contrast Set Register (Retentive)	Read / Write	To adjust the contrast of LCD. It is retentive system register. Value can be between 0 to 100 only.
SW122	Brightness Set Register (Retentive)	Read / Write	This register is implemented as retentive register in firmware and used for controlling the brightness of unit.
SW123	Factory Application 6	Read / Write	Reserved for factory application
SW124	Factory Application 7	Read / Write	Reserved for factory application
SW125	Factory Application 8	Read / Write	Reserved for factory application
SW126	Factory Application 9	Read / Write	Reserved for factory application
SW127	Failed Expansion slot reconnect time (Sec)	Read / Write	Shows time in sec recover the communication with failed nodes for Expansion port .the default value is 60Sec

## System Bit / Coil

Register / Coil	Tag Name	Read / Write	Description
S0000	Carry bit	Read/Write	Overflow indication in math operations of ladder and also used in rotate with carry instruction.
S0001	High speed timer control bit	Read/write	Enable bit to start high speed timer
S0003	Minute Change status	Read only	1 for every change in minute for one scan cycle
S0004	Hour Change status	Read only	1 for every change in hour for one scan cycle
S0005	Date Change status	Read only	1 for every change in date for one scan cycle
S0006	Month Change status	Read only	1 for every change in month for one scan cycle
S0007	Year Change status	Read only	1 for every change in year for one scan cycle
S0008	Screen saver Control	Read/Write	0: Disable screen saver; 1: Enable screen saver Runtime you can change this bit
S0009	Beeper Control	Read/Write	1: Enable Beeper; 0: Disable Beeper Runtime you can change this bit
S0010	RTC Battery status	Read only	0: Battery voltage is OK (i.e. above 2.2 V) 1: Low battery (I.e. below 2.2 V)
S0012	Refresh historical trend	Read/Write	Refresh historical trend window when set to1
S0014	Acknowledge all alarms	Read only	0: All alarms are acknowledged; 1: All alarms are not acknowledged in the Real and Historical alarms
S0016	Valid key beeper Control	Read/Write	1: Enable valid beeper; 0: Disable valid beeper Run time you can change this bit
S0017	Invalid key beeper Control	Read/Write	1: Enable Invalid beeper; 0: Disable Invalid beeper. Run time you can change this bit
S0019	Invalid RTC date entry	Read only	0=valid date 1= Invalid date
S0020	Popup Screen trigger	Read/Write	This bit triggers the popup screen number stored in S23
S0021	COM1 failed node reconnect	Read/write	If this bit is set communication with the failed control nodes is detected after scan time S0018 for port1. By default : ON
S0022	COM2 failed node reconnect	Read/write	If this bit is set communication with the failed control nodes is detected after scan time S0019 for port2. By default : ON
S0023	COM3 failed node reconnect	Read/write	If this bit is set communication with the failed control nodes is detected after scan time S0022 for port3. By default : ON
S0024	Start/Stop Calibration	Read/Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
S0025	Min/Max Clibration Value	Read/Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
S0026	Save Calibration Data	Read/Write	Used for Calibration Application So hardcoded in Runtime code & Firmware
S0027	Static Data Entry Focus Control	Read/Write	User can enable focus for static data entry using this bit.
S0028	Datalog Group1 log Control	Read/Write	User can Start/Stop logging in Bit Task mode for Group1 by using this bit
S0029	Datalog Group2 log Control	Read/Write	User can Start/Stop logging in Bit Task mode for Group2 by using this bit
S0030	Datalog Group3 log Control	Read/Write	User can Start/Stop logging in Bit Task mode for Group3 by using this bit
S0031	Datalog Group4 log Control	Read/Write	User can Start/Stop logging in Bit Task mode for Group4 by using this bit
S0032	Data Entry Lock Control	Read/Write	User can Lock / Unlock the data entry. 1 = Data_Entry Lock, 0 = Data_Entry unlock.

Register / Coil	Tag Name	Read / Write	Description
S0033	Data Entry Key Selection	Read/Write	User can chose the mode of data entry using this bit. 1= Start data entry only through 'Enter' key. 0= Start data entry through 'Enter' key or Numeric key.
S0034	Ladder Instruction Error Status		Set if Division by zero operation is performed in the ladder instruction and for invalid conditions or operands in case of conversion instructions.
S0035	Real and Historical Alarm	Read/Write	If the selected coil is one the unit will not Control monitoring(Ignoring) any alarm. After resetting the coil unit will again start to monitor the alarm.
S0036	RUN LED Control	Read/Write	0: LED functionality works for upload/RUN/ Communication status 1: LED OFF
S0037	USB Host Menu Trigger	Read/Write	System tag to allow USB host operation to user
S0038	Factory application Menu Trigger	Read/Write	System tag to allow to enter in Factory application mode
S0039	Backlite Colour Control-Red (Retentive)	Read/Write	To control the RED Color backlite operation (Refer section 12.9)
S0040	Backlite Color Control-Green (Retentive)		Read/Write To control the GREEN Color backlite operation (Refer section 12.9)
S0041	Backlite Colour Control-Blue (Retentive)	Read/Write	To control the BLUE Color backlite operation (Refer section 12.9)
S0042	HMI DHCP Enable/Disable	Read Only	DHCP Enable/Disable

## Config Registers:

Register / Coil	Tag Name	Read / Write	Description
MW0000	PLC Operation Mode	Read/Write	Bit0-3: 0: Initialization; 1: HALT Mode; 2: RUN Mode; 3: RUN-F Mode; 4: HOLD Mode; 6: ERROR Mode. Invalid value: Previous value will be retained.
MW0003	RUN/STOP Switch Control	Read/Write (Retentive)	1: HALT, 0: RUN. Only LSB is used. MSB bits (1 to 15) will be ignored.
MW0005	Digital Filter constant (0 to 15 mS)	Read/Write	Entered Value is multiple of 10 ms. Enabled when MW10 bit 16 is ON.
MW0010	HSC Configuration register (CH1)	Read/Write	Configure High Speed Counter (CH1)
MW0011	High Speed Counter (HSC) Register (CH1)	Read/Write	Displays Counter Value for High Speed Counter (CH1)
MW0013	HSC Preset Register (CH1)	Read/Write	Sets Preset value High Speed Counter (CH1)
MW0020	HSC Configuration register (CH2)	Read/Write	Configure High Speed Counter (CH2)
MW0021	High Speed Counter (HSC) Register (CH2)	Read/Write	Displays Counter Value for High Speed Counter (CH2)
MW0023	HSC Preset Register (CH2)	Read/Write	Sets Preset value High Speed Counter (CH2)
MW0033	Unit IP Address Lo Word	Read Only	
MW0034	Unit IP Address Hi Word	Read Only	
MW0035	Unit Subnet Mask Address Low Word	Read Only	
MW0036	Unit Subnet Mask Address High Word	Read Only	
MW0037	Unit Default Gateway Low Word	Read Only	
MW0038	Unit Default Gateway High Word	Read Only	
MW0100	HSC Configuration register (CH1)-Slot 01	Read/Write	Configure High Speed Counter (CH1) -Slot 01
MW0101	High Speed Counter (HSC) Register (CH1)-Slot01	Read/Write	Displays Counter Value for High Speed Counter (CH1) -Slot 01
MW0103	HSC Preset Register (CH1)-Slot01	Read/Write	Sets Preset value High Speed Counter (CH1) - Slot 01
MW0106	HSC Configuration register (CH2)-Slot01	Read/Write	Configure High Speed Counter (CH2) -Slot 01
MW0107	High Speed Counter (HSC) Register (CH2)-Slot01	Read/Write	Displays Counter Value for High Speed Counter (CH2) -Slot 01
MW0109	HSC Preset Register (CH2)-Slot01	Read/Write	Sets Preset value High Speed Counter (CH2) - Slot 01
MW0200	HSC Configuration register (CH1)-Slot02	Read/Write	Configure High Speed Counter (CH1) -Slot 02
MW0201	High Speed Counter (HSC) Register (CH1)-Slot02	Read/Write	Displays Counter Value for High Speed Counter (CH1) -Slot 02
MW0203	HSC Preset Register (CH1)-Slot02	Read/Write	Sets Preset value High Speed Counter (CH1) - Slot 02
MW0206	HSC Configuration register (CH2)-Slot02	Read/Write	Configure High Speed Counter (CH2) -Slot 02
MW0207	High Speed Counter (HSC) Register (CH2)-Slot02	Read/Write	Displays Counter Value for High Speed Counter (CH2) -Slot 02
MW0209	HSC Preset Register (CH2)-Slot02	Read/Write	Sets Preset value High Speed Counter (CH2) - Slot 02
MW0300	HSC Configuration register (CH1)-Slot03	Read/Write	Configure High Speed Counter (CH1) -Slot 03

Register / Coil	Tag Name	Read / Write	Description
MW0301	High Speed Counter (HSC) Register (CH1)-Slot03	Read/Write	Displays Counter Value for High Speed Counter (CH1) -Slot 03
MW0303	HSC Preset Register (CH1)-Slot03	Read/Write	Sets Preset value High Speed Counter (CH1) - Slot 03
MW0306	HSC Configuration register (CH2)-Slot03	Read/Write	Configure High Speed Counter (CH2) -Slot 03
MW0307	High Speed Counter (HSC) Register (CH2)-Slot03	Read/Write	Displays Counter Value for High Speed Counter (CH2) -Slot 03
MW0309	HSC Preset Register (CH2)-Slot03	Read/Write	Sets Preset value High Speed Counter (CH2) - Slot 03
MW0400	HSC Configuration register (CH1)-Slot04	Read/Write	Configure High Speed Counter (CH1) -Slot 04
MW0401	High Speed Counter (HSC) Register (CH1)-Slot04	Read/Write	Displays Counter Value for High Speed Counter (CH1) -Slot 04
MW0403	HSC Preset Register (CH1)-Slot04	Read/Write	Sets Preset value High Speed Counter (CH1) - Slot 04
MW0406	HSC Configuration register (CH2)-Slot04	Read/Write	Configure High Speed Counter (CH2) -Slot 04
MW0407	High Speed Counter (HSC) Register (CH2)-Slot04	Read/Write	Displays Counter Value for High Speed Counter (CH2) -Slot 04
MW0409	HSC Preset Register (CH2)-Slot04	Read/Write	Sets Preset value High Speed Counter (CH2) - Slot 04
MW0500	HSC Configuration register (CH1)-Slot05	Read/Write	Configure High Speed Counter (CH1) -Slot 05
MW0501	High Speed Counter (HSC) Register (CH1)-Slot05	Read/Write	Displays Counter Value for High Speed Counter (CH1) -Slot 05
MW0503	HSC Preset Register (CH1)-Slot05	Read/Write	Sets Preset value High Speed Counter (CH1) - Slot 05
MW0506	HSC Configuration register (CH2)-Slot05	Read/Write	Configure High Speed Counter (CH2) -Slot 05
MW0507	High Speed Counter (HSC) Register (CH2)-Slot05	Read/Write	Displays Counter Value for High Speed Counter (CH2) -Slot 05
MW0509	HSC Preset Register (CH2)-Slot05	Read/Write	Sets Preset value High Speed Counter (CH2) - Slot 05

## Config Coils:

Register / Coil	Tag Name	Read / Write	Description
M00016	CPU error	Read Only	ON at error state
M00017	I/O error	Read Only	ON at error state
M00018	Program error	Read Only	ON at error state. This group includes Laader Scan time.
M00021	Clock/calendar illegal value warning	Read Only	ON when clock/calendar data is illegal
M00022	Retentive data invalid warning	Read Only	ON when retentive data in RAM are invalid
M00027	Watchdog timer error	Read Only	ON at error state
M00029	I/O mismatch error	Read Only	ON at error state
M00031	I/O communication error	Read Only	ON at error state
M00033	Ladder Scan time error	Read Only	ON when the scan time exceeds 200ms (default)
M00240	HSC Enable Bit (CH1)	Read/Write	Start Counting for High Speed Counter (CH1)
M00241	HSC Reset Bit(CH1)	Read/Write	Reset High Speed Counter (CH1)
M00400	HSC Enable Bit (CH2)	Read/Write	Start Counting for High Speed Counter (CH2)
M00401	HSC Reset Bit(CH2)	Read/Write	Reset High Speed Counter (CH2)
M00480	System timer coil for 0.1 sec interval	Read Only	Toggle at 50 % duty cycle
M00481	System timer coil for 0.2 sec interval	Read Only	Toggle at 50 % duty cycle
M00482	System timer coil for 0.4 sec interval	Read Only	Toggle at 50 % duty cycle
M00483	System timer coil for 0.8 sec interval	Read Only	Toggle at 50 % duty cycle
M00484	System timer coil for 1 sec interval	Read Only	Toggle at 50 % duty cycle
M00485	System timer coil for 2 sec interval	Read Only	Toggle at 50 % duty cycle
M00486	System timer coil for 4 sec interval	Read Only	Toggle at 50 % duty cycle
M00487	System timer coil for 8 sec interval	Read Only	Toggle at 50 % duty cycle
M00496	Timer interrupt ladder execution status	Read Only	ON when Timer program is executing
M00497	IO1 interrupt execution status	Read Only	ON when IO1 program is executing
M00498	IO2 interrupt execution status	Read Only	ON when IO2 program is executing
M00512	ALWAYS ON	Read Only	This coil is always ON
M00513	ALWAYS OFF	Read Only	This coil is always OFF
M01080	HSC Enable Bit (CH1)-Slot01	Read/Write	Start Counting for High Speed Counter (CH1) - Slot 01
M01081	HSC Reset Bit(CH1)-Slot01	Read/Write	Reset High Speed Counter (CH1) -Slot 01
M01176	HSC Enable Bit (CH2)-Slot01	Read/Write	Start Counting for High Speed Counter (CH2) - Slot 01
M01177	HSC Reset Bit(CH2)-Slot01	Read/Write	Reset High Speed Counter (CH2) -Slot 01
M02080	HSC Enable Bit (CH1)-Slot02	Read/Write	Start Counting for High Speed Counter (CH1) - Slot 02
M02081	HSC Reset Bit(CH1)-Slot02	Read/Write	Reset High Speed Counter (CH1) -Slot 02
M02176	HSC Enable Bit (CH2)-Slot02	Read/Write	Read/Write Start Counting for High Speed Counter (CH2) - Slot 02
M02177	HSC Reset Bit(CH2)-Slot02	Read/Write	Reset High Speed Counter (CH2) -Slot 02
M03080	HSC Enable Bit (CH1)-Slot03	Read/Write	Start Counting for High Speed Counter (CH1) - Slot 03
M03081	HSC Reset Bit(CH1)-Slot03	Read/Write	Reset High Speed Counter (CH1) -Slot 03
M03176	HSC Enable Bit (CH2)-Slot03	Read/Write	Start Counting for High Speed Counter (CH2) - Slot 03

Register / Coil	Tag Name	Read / Write	Description
M03177	HSC Reset Bit(CH2)-Slot03	Read/Write	Reset High Speed Counter (CH2) -Slot 03
M04080	HSC Enable Bit (CH1)-Slot04	Read/Write	Start Counting for High Speed Counter (CH1) - Slot 04
M04081	HSC Reset Bit(CH1)-Slot04	Read/Write	Reset High Speed Counter (CH1) -Slot 04
M04176	HSC Enable Bit (CH2)-Slot04	Read/Write	Start Counting for High Speed Counter (CH2) - Slot 04
M04177	HSC Reset Bit(CH2)-Slot04	Read/Write	Reset High Speed Counter (CH2) -Slot 04
M05080	HSC Enable Bit (CH1)-Slot05	Read/Write	Start Counting for High Speed Counter (CH1) - Slot 05
M05081	HSC Reset Bit(CH1)-Slot05	Read/Write	Reset High Speed Counter (CH1) -Slot 05
M05176	HSC Enable Bit (CH2)-Slot05	Read/Write	Start Counting for High Speed Counter (CH2) - Slot 05
M05177	HSC Reset Bit(CH2)-Slot05	Read/Write	Reset High Speed Counter (CH2) -Slot 05

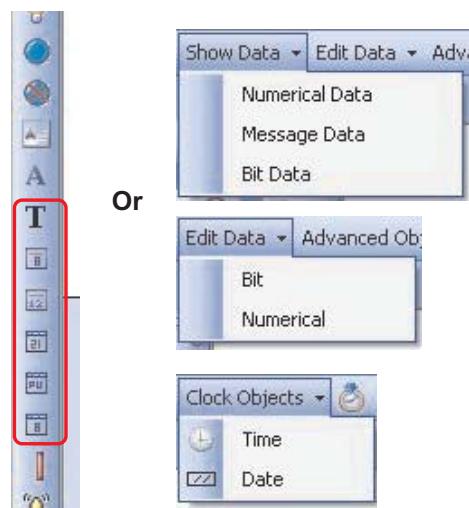
## **REPRESENTING DATA BY OBJECTS AND WIZARDS**

In this chapter. . . .

- \* Alphanumeric Objects
- \* Graphic Objects
- \* Wizards
- \* Import & Export Multilingual text objects

## 5.1 Alphanumeric Objects

Alphanumeric objects are objects with certain properties or attributes. By using various attributes, the designer can emphasize the importance of a particular object. The alphanumeric objects in models with a graphics display have some additional attributes.



The Alphanumeric object types are

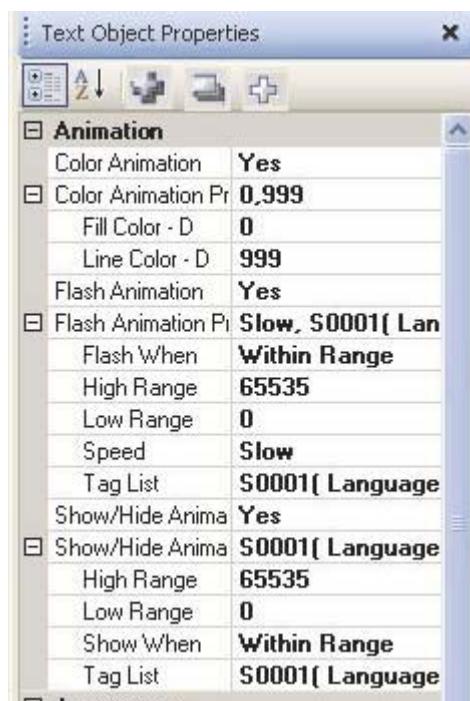
1. Text Object
2. Data Entry
3. Display Data
4. Time
5. Date

Select the object and the corresponding properties which can be assigned to object are shown in property window. Some of the common properties from property grid window , which can be set to these alphanumeric objects are Animation and Layout.

**Animation** :- Select the object and observe the property grid window. The object can be animated in various individual or in combination forms. Types through which an object can be animated are

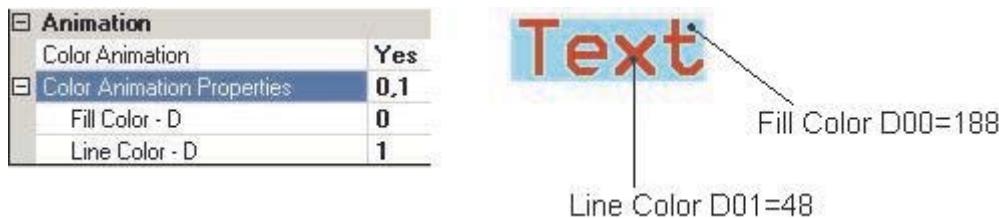
- |                        |   |
|------------------------|---|
| a) Color Animation     | :- Text/Line Color and background color can be changed. |
| b) Flash Animation     | :- Object is Flashed at various speed(Slow,Med, High)   |
| c) Show/Hide Animation | :- Object is shown / hidden as per the Tag value.       |

To select any type user needs to change the status in corresponding cell as 'Yes'. By default the text in this cell is 'No' representing the animation is disabled. Following window shows the parameters to be defined for animation



Color Animation :-

To perform color animation, this cell has to be defined as 'Yes'. Defining Yes , few more cells with Color Animation Properties are enabled. In these cell Data Register Number is to be defined for Fill color and Line color. The value in these data Register will represent to the Color pallet number and accordingly the Background(i.e. Fill) and Text(i.e.Line) color will be defined for the object.E.g:- Here Fill color cell is defined with Data Reg D00 and Line color cell is defined with Data reg D01. In unit Value entered in D00=188 represent the Blue color for Background and value entered in D01 represent Red Color for text.

**Note:-**

- i) Data register range is from D000-D999, hence designer cannot define the Data register above 999.
- ii) In unit ,depending on the product being used , designer can only enter color pallet number value from 0-15(For Product with Monochrome LCD) or 0-255(For product with Color LCD) only.
- iii) This feature can be tested and confirmed through Offline simulation also
- iv) for more details of Color pallets please refer Color Dialog Box Section.

Flash Animation :-

To perform Flash Animation , this cell has to be defined as 'Yes'. Defining Yes , few more cells with Flash Animation Properties are enabled. Flash animation is dependent on the internal or PLC tag. This tag can be either coil type or Numeric Type. As per the selection of tag type used for animation , other cell property ranges of Flash animation are defined.

Flash Animation	Yes	Yes
<b>Flash Animation Properties</b>	Slow, D0000( Data Reg ), Within Range (0,65535)	Fast, B0000( B000 ), On
Flash When	Within Range	On
High Range	65535	Fast
Low Range	0	B0000 or B000 1
Speed	Slow	
Tag List	D0000( Data Reg )	Coil / Bit Data Type

**Numeric Data Type**

- Flash When:-** Designer can see following text in this cell  
 -Within Range/Out of range (If tag Selected is of Numeric type)  
 -On/Off (If tag selected is of Bit/Coil type)  
 If the tag is numeric type then designer can define to flash the object within some range of values of the tag or to flash the object out of range of the values of the tag.  
 If the Tag is Coil/Bit type then designer can define to flash the object at the On state of the tag or to flash the object at Off state of the tag.
- Speed:-** Three various speeds at which the object can be flashed are Slow, Medium and Fast.
- Tag List:-** To define the tag either Numeric type or Coil type, on whose condition object embedded on screen will be defined for Flash Animation.If the tag is numeric type then 'Flash when' cell will be with within range option or Out of range option.Even two more cells with High range and Low range is enabled,in which the low limit and high limit value has to be defined by the designer. According to the value in the tag and flash when option selected by designer , object will flash. If the tag is Coil type then object can be flashed on the On state of the tag or on the Off state of the tag.  
 Flyout to this cell will show the list of already defined tags from tag database.

**Note:-**

- i) Value that can be defined in Low range and high range cell is from 0-65535 only.
- ii) This feature can be tested and confirmed through Offline simulation / Run mode also
- iii) If Flash animation is selected in Animation section , then Flash Cell from Appearance section is disabled.

Show / Hide Animation :-

To show or hide the object embedded on unit screen can be performed with defining this cell as 'Yes'. The important parameters to be set to enable Show/ Hide Animation are 'Show When' (with Low Range value, high range value or On State , Off State) and tag list(with register type tag or Bit type tag).

Visibility Animation	Yes	Yes
Visibility Animation Properties	D0000( Data Reg ), Within Range (0,65535)	B0000( B000 ), On
High Range	65535	On
Low Range	0	B0000( B000 )
Show When	Within Range	
Tag List	D0000( Data Reg )	

Coil / Bit Data Type

**Numeric Data Type**

If the tag defined in tag list is numeric type then two more cells will be displayed with high range and low range. The value in this low range or high range cell can be set from 0-65535.

If designer defines 'Within range' option in 'show When' cell then Object embedded on screen will be Shown/ Displayed on screen only when value of the numeric tag selected in tag list is Within low limit and high limit range. If the designer defines 'out of range' option then object embedded on screen will be shown/Displayed on screen only when value of tag is Out of range of the low limit and high limit range.

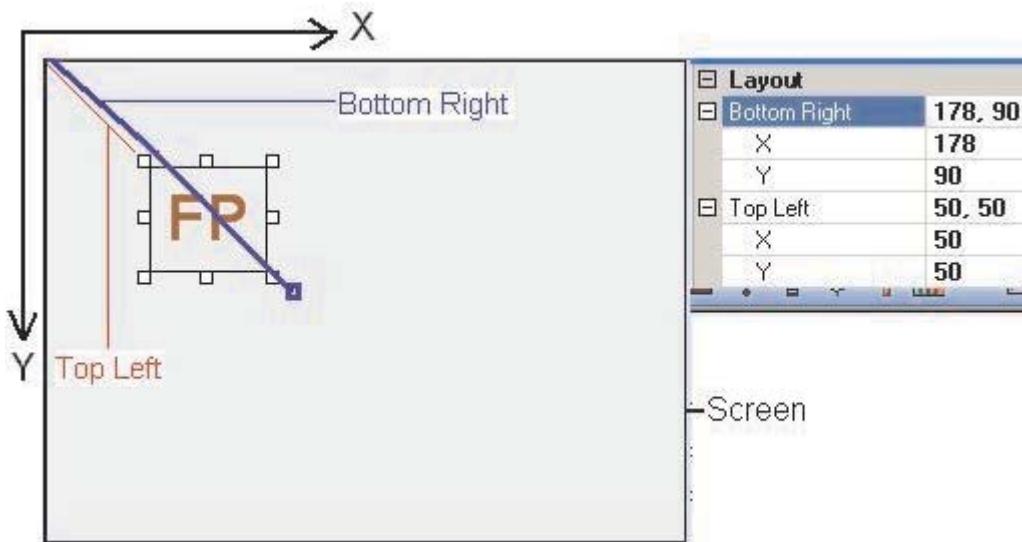
If designer defines the coil type tag in taglist then, the object will be shown/displayed on screen only when the coil type tag is On or Off state.

**Note:-**

- i) This feature can be tested and confirmed through Offline simulation / Run mode also

Layout:-

To embed the Object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object.

Bottom Right:-

Display the End point pixel position of the object from Top left corner of the screen.

X-> Display the X Coordinate position of End point of object from Top left corner of the screen.

Y-> Display the Y Coordinate position of End point of object from Top left corner of the screen.

Top Left:-

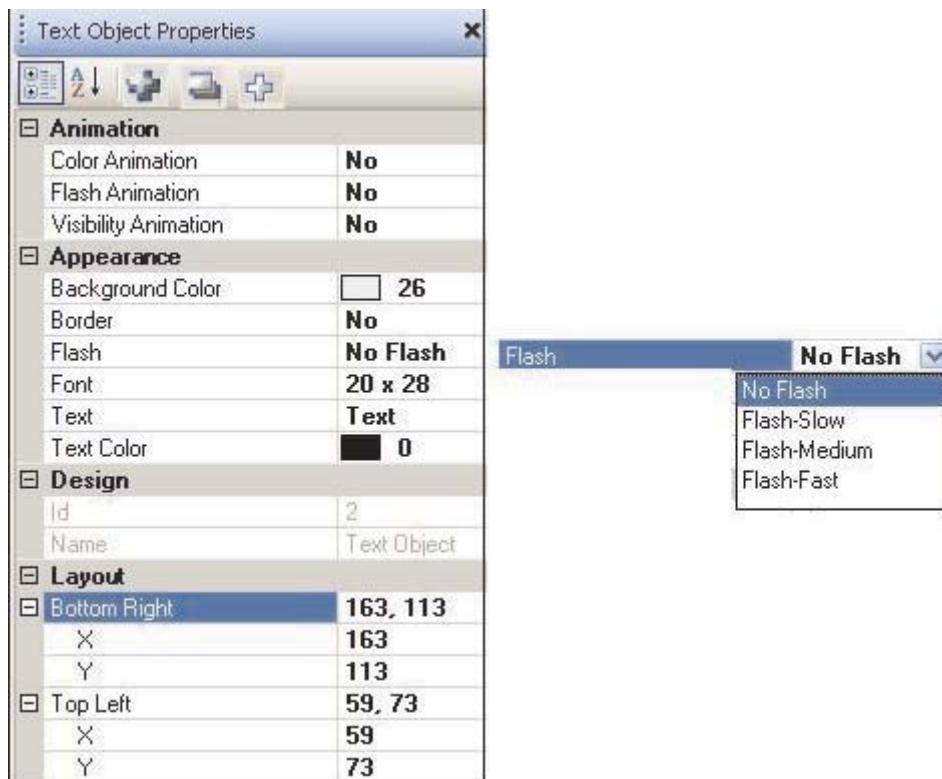
Display the Start point pixel position of the Text object from Top left corner of the screen.

X-> Display the X Coordinate position of Start point of object from Top left corner of the screen.

Y-> Display the Y Coordinate position of start point of object from Top left corner of the screen.

### 5.1.1 Text Object :-

To display the message for the operator on unit screen. Designer can define the size, color, flashing properties to this Text object. All such display properties for the text object can be set through the Property grid Window from right side of the software screen. Plain text objects do not depend on the PLC, but can be made dependent on PLC tag by defining animation cells from property grid window.



#### Animation:-

Text object can be animated in various forms such as Changing the Text Color or background color , Flashing the Text object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the Text object depending on the value of internal or PLC tag.

For more details please refer to the Animation section.

#### Appearance :-

Background color :- Background color of the text object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color Display then available colors are 256 RGB Colors. By default the background color for any product is white.

Border:- Border for Text object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout.The border can be Single line border or double line border.

Flash:- To flash the Text object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'. In this cell Designer needs to define the Flash Speed to be assigned to the Text object embedded on Screen.

Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast. Object with all properties defined (Border,backgroundetc) gets flashed.

Font:- To display the Text Object on unit screen in various sizes. The text object supports only the software defined sizes.The available sizes in which this Text object can be set are 5x7,10x14,20x28,7x14.

Text:- To write the message which designer needs to display it on unit screen. Designer can write any alphanumeric characters in this cell.

Text Color:- To set the color to the Text object in order to display the Text message on screen in desired color by designer. Text color of the Text object varies from product to product. Range of color depends upon the type of LCD used for selected product. Products with Monochrome LCD can have 16 Grey Scale colors and Color LCD can have 256 colors varying in combination of RGB colors. Default text color for any product is selected as Black.

Layout:- To embed the time object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section in start of this document.

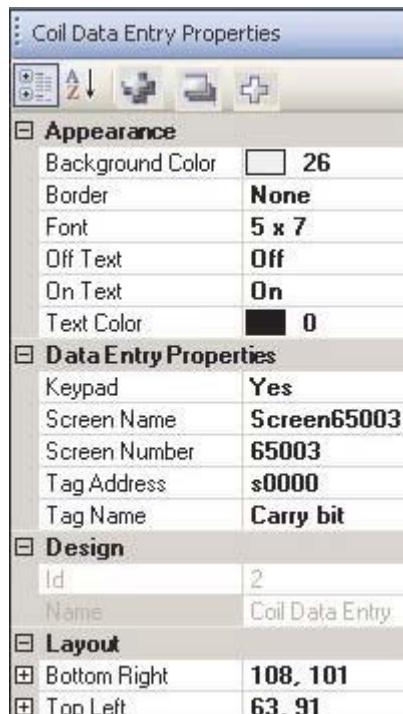
### 5.1.2 Data Entry Object :-

This object is useful to display and edit the value of internal or PLC tag. The tag data type can be either Bit type or Numeric type. The tag type should be Read/Write. The edit the object on unit screen , designer can define either the use of Popupkeypad or Numeric Keypad.

Select the Bit type or Numeric type data object from Flyout.

#### 5.1.2.1 Bit Type Data Entry Object:-

Select Bit/Coil type object from Data Entry object flyout, embed it on screen and edit the desired properties of it from Property grid window.



#### Appearance:-

##### Background Color :-

Background color of the data entry object can be changed through this cell.The flyout will display color dialog box, with supported colors for the product If product is with Monochromedisplay then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors.By default the background color for any product is White.

Border:- Border for data entry object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout.The border can be Single line border or double line border.

Font:- To display the data entry object on unit screen in various sizes. The data entry object supports only the software defined sizes.The available sizes in which this object can be set are 5x7,10x14,20x28,7x14.

Off text :- To display the Off state condition through Text message for the coil tag defined for Coil type data entry object is to be defined in this cell. Designer can use any alphanumeric characters or special characters to display the off text in unit.

On text :- To display the ON state condition through Text message for the coil tag defined for Coil type data entry object is to be defined in this cell. Designer can use any alphanumeric characters or special characters to display the off text in unit.

Text Color:- To set the color to the data entry object in order to display the value of coil type tag on screen in desired color by designer. Text color of the data entry object varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

#### **Data Entry Properties:-**

Keypad:- To edit the Coil type tag's status on unit screen , user needs to have the keypad on screen. This keypad can be made available in two ways , either with Popup screen with numeric keypad embedded in it or with Numeric keypad embedded on the Screen near the data entry object.This keypad function is optional with 'Yes' or 'No'. If 'Yes' is defined then popup screen with numeric keypad embedded on it will be displayed on screen to enter the data. And if 'No' is defined then user will have to enter data through a static numeric keypad embedded on screen near the data entry object.

Screen Name:- If the popup keypad option is defined in above cell , then only this Screen name cell is displayed.This cell shows the name of the popup screen defined for editing Data entry object. List of popup keypad with name available in the application project can be selected from flyout of this cell. Editing this cell will show the corrsponding screen number in following screen number cell.

Screen Number:- If the popup keypad option is defined in above cell , then only this Screen number cell is displayed.This cell shows the number of the popup screen defined for editing Data entry object. List of popup keypad numbers available in the application project can be selected from flyout of this cell. Editing this cell will show the corrsponding screen name in above screen name cell.

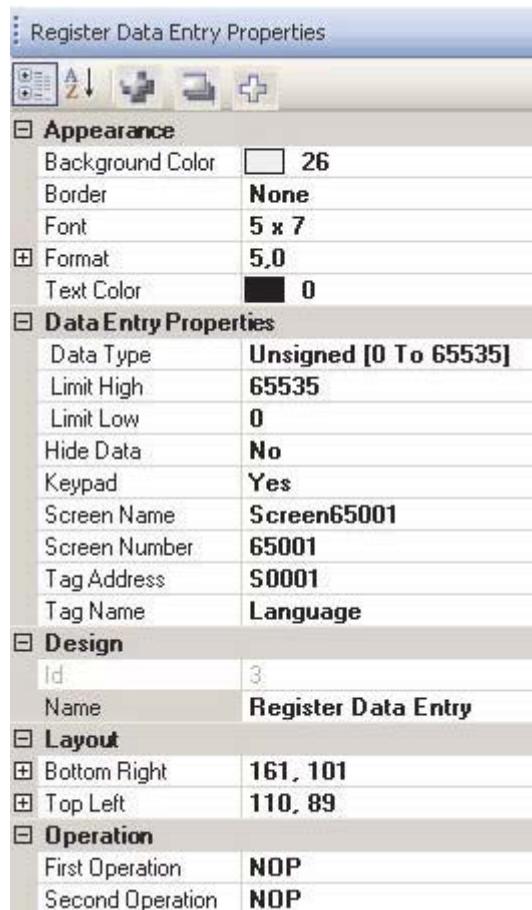
Tag address:- Type tag on which data entry operation is to be performed is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag in following Tag name cell.

Tag Name:- Name of the bit type tag on which data entry operation is to be performed is to be defined in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

Layout:- To embed the data entry object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the data entry object on screen with mouse cursor will show the corrsponding pixel position of the placed object. For more details please refer Layout section in start of this document.

### 5.1.2.1 Numeric Type Data Entry Object:-

Select numeric type object from Data Entry object flyout, embed it on screen and edit the desired properties of it from Property grid window.



#### **Appearance:-**

Background Color :- Background color of the data entry object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product If product is with Mono chrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is White.

#### Border:-

Border for data entry object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout. The border can be Single line border or double line border.

#### Font:-

To display the data entry object on unit screen in various sizes. The data entry object supports only the software defined sizes. The available sizes in which this object can be set are 5x7, 10x14, 20x28, 7x14.

#### Text Color:-

To set the color to the data entry object in order to display the value of numerical type tag on screen in desired color by designer. Text color of the data entry object varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

#### Format :-

Digit format to be used for Numerical data entry object Can be defined. The total digits that can be displayed on unit screen are 1 to 10.

Decimal Point from Right:- To define the decimal point position from right side of the digits. The value for this cell can vary from 0 to 10. The format that can be defined will be from '#.' to '#####.#.'

Number of Digits:- Total number of digits to be used to display the numerical data entry object.

Digits to be displayed after decimal point are also included in it. Range of total number of digits to be displayed varies from 0 to 10.

**Data Entry Properties:-**

- Data Type:- List of data type and its ranges to be used to display the selected tag in numerical data entry object is displayed in this cell. Various Data type supported are Unsigned, Signed, Hexadecimal, BCD, Binary, Ascii, ASCII Numeric, float. Data types and its range is displayed as per the bytes defined for the tag in tag data base. If tag is 2 byte, the data type available are with range 0 to 65535 and if tag is 4 byte, with the range of 0 to 4294967295, even Float data type is also displayed if 4 byte tag is selected in tag list cell. The ranges are set automatically depending upon the tag selected.
- Limit High:- Maximum limit of selected Tag in Data Entry object is to be defined in this cell. The best use of this high limit can be made to limit any data entry for the tag to upto certain value. By default this high limit is the highest limit of 2 byte word / 4 byte word. i.e if 2 byte word then High limit is 65535 and if 4 byte word then high limit is 4294967295.
- Limit Low:- Minimum limit of selected tag in Data Entry object can be defined in this cell. The best use of this limit can be made to limit the tag value upto certain value. By default the low limit value is 0.
- Hide data:- This cell information is optional. Designer will have to define 'Yes' to hide data on unit screen and defines 'No' to display the data on screen as it is. If Hide data is selected, then Data entry object on unit screen will show '\*\*\*'. Even editing it will display in \*\*\* format ,and will not display the value.
- Keypad:- To edit the Numerical type tag's value on unit screen , user needs to have the keypad on screen. This keypad can be made available in two ways , either with Popup screen with numeric keypad embedded in it or with Numeric keypad embedded on the Screen near the data entry object.This keypad function is optional with 'Yes' or 'No'. If 'Yes' is defined then popup keypad with numeric keypad embedded on it will be displayed on screen to enter the data. And if 'No' is defined then designer has to embedd a static numeric keypad on screen near the data entry object.
- Screen Name:- If the popup keypad option is defined in above cell , then only this Screen name cell is displayed. This cell shows the name of the popup screen defined for editing Data entry object. List of popup keypad with name available in the application project can be selected from flyout of this cell. Editing this cell will show the corrsponding screen number in following screen number cell.
- Screen Number:- If the popup keypad option is defined in above Keypad cell, then only this Screen number cell is displayed.This cell shows the number of the popup screen defined for editing Data entry object. List of popup keypad numbers available in the application project can be selected from flyout of this cell. Editing this cell will show the corrsponding screen name in above screen name cell.
- Tag address:- Numerical type tag on which data entry operation is to be performed is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag in following Tag name cell.
- Tag Name:- Name of the numerical type tag on which data entry operation is to be per formed is to be defined in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Layout:-**

To embed the data entry object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the data entry object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

**Operations:-**

Some of the mathematical operations that can be performed over the tag selected in data entry object are add,sub,Mul,Divide.these operations with some operand value can be performed with simultaneous entry of the value in Tag. Two different operations can be performed on one tag.

**First Operation:-**

The designer can have a math operations performed on the data. The default selection is NOP or no Operations. Operations which can be performed are add,Sub,Multiply and Divide. When any of the mathematical operation is selected , First Operand Cell is enabled, where user needs to enter the operand value.

**Second Operation :-**

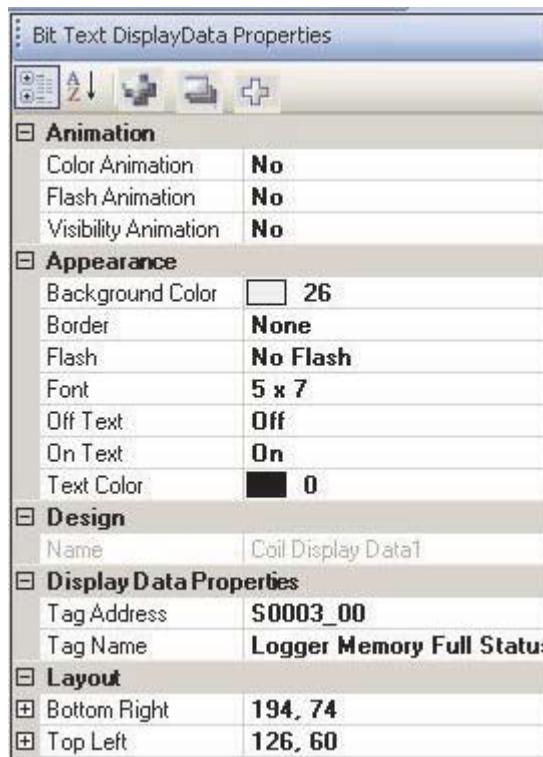
The designer can have a second math operations performed on the same numerical Data Entry object Tag. The default selection is NOP or no operation Operations which can be performed are addition ,Subtraction, Multiply and Divide. When any of the mathematical operation is selected, second Operand Cell is enabled, where user needs to enter the operand value.

### 5.1.3 Display Data Object :-

Any read only register or coil tag from the units internal memory or PLC memory can be embedded on unit screen to display the value. The tag data type can be either Bit type ,Numerical type or with numerical text type. The tag type should be Read/Write.Editing the value of Display data tag is not possible.

#### **Bit Type Display data Object:-**

Select Bit/Coil type object from display object flyout,embed it on screen and edit the desired properties of it from Property grid window.



**Animation:-** Display data object can be animated invarious forms such as Changing the text Color or background color, Flashing the display data object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the display data object depending on the value of internal or PLC tag. Refer to the above page for more details of Animation.

#### **Appearance:-**

Background Color :- Background color of the display data object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is White.

Border:- Border for display data object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout.The border can be Single line border or double line border.

Flash:- To flash the coil type display data object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'.In this cell Designer needs to define the Flash Speed to be assigned to the Text object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast. Object with all properties defined (Border,background,etc) gets flashed.

Font:- To display the display data object on unit screen in various sizes. The display data object supports only the software defined sizes. The available sizes in which this object can be set are 5x7,10x14,20x28,7x14.

Off text :- To display the Off state condition through Text message for the coil tag defined for Coil type display data object is to be defined in this cell. Designer can use any alphanumeric characters or special characters to display the off text in unit.

- On text :- To display the ON state condition through Text message for the coil tag defined for Coil type display data object is to be defined in this cell. Designer can use any alphanumeric characters or special characters to display the off text in unit.
- Text Color:- To set the color to the data entry object in order to display the value of coil type tag on screen in desired color by designer. Text color of the data entry object varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

#### Display data properties:-

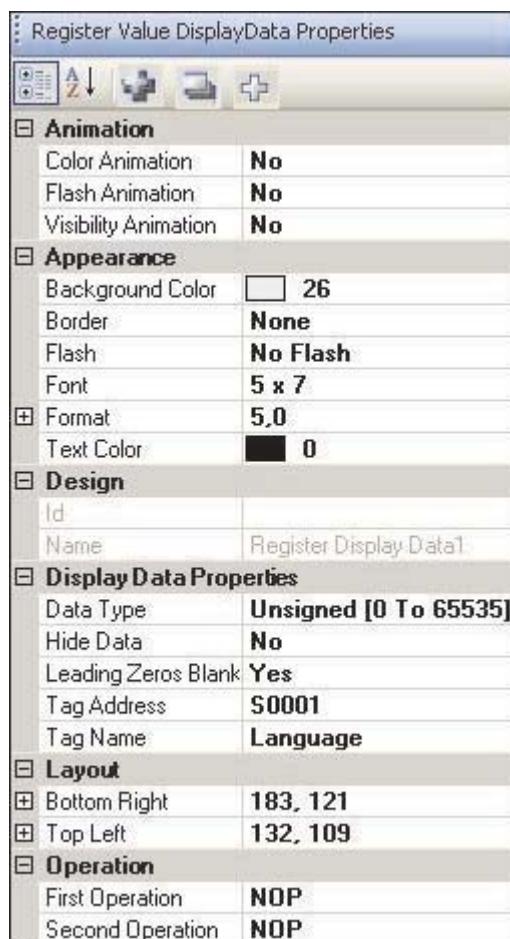
Tag address:- Bit/Coil type tag which is to be defined for Display Data objects are displayed in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag in following Tag name cell.

Tag Name:- Name of the Bit/Coil type tag which is to be defined for Display Data objects are displayed in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Layout:-** To embed the display data object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section in start of this document.

#### Numerical Type Display Data Object:-

Select numerical data type from display data object flyout, embed it on screen and edit the desired properties of it from Property grid window.



**Animation:-** Display data object can be animated in various forms such as Changing the text Color or background color , Flashing the display data object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the display data object depending on the value of internal or PLC tag. Refer to the above page for more details of Animation.

**Appearance:-**

Background Color :- Background color of the display data object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is White.

Border:- Border for display data object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout. The border can be Single line border or double line border.

Flash:- To flash the numerical display data object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'. In this cell Designer needs to define the Flash Speed to be assigned to the numerical display data object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast. Object with all properties defined (Border,backgroundetc) gets flashed.

Font:- To display the display data object on unit screen in various sizes. The numerical display data object supports only the software defined sizes. The available sizes in which this object can be set are 5x7,10x14,20x28,7x14.

Format:- Digit format to be used for Numerical display data object can be defined. The total digits that can be displayed on unit screen are 1 to 10.

Decimal Point from Right:- To define the decimal point position from right side of the digits. The value for this cell can vary from 0 to 10. The format that can be defined will be from '#.' to '#.#.#.#.#.'

Number of Digits:- Total number of digits to be used to display the numerical display data object. Digits to be displayed after decimal point are also included in it. Range of total number of digits to be displayed varies from 0 to 10.

Text Color:- To set the color to the display data object in order to display the value of coil type tag on screen in desired color by designer. Text color of the data entry object varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

**Display Data Properties:-**

Data Type:- List of data type and its ranges to be used to display the selected tag in numerical display data object is displayed in this cell. Various Data type supported are Unsigned, Signed, Hexadecimal, BCD, Binary, Ascii, ASCII Numeric, float. Data types and its range is displayed as per the bytes defined for the tag in tag data base. If tag is 2 byte, the data type available are with range 0 to 65535 and if tag is 4 byte, then Float data type is also displayed which requires to be 4 byte and with the be 0 to 4294967295. The ranges are set automatically depending upon the tag selected.

Hide data:- This cell information is optional. Designer defines 'Yes' to hide data on unit screen and defines 'No' to display the data on screen as it is. If Hide data is selected, then display data object on unit screen will show '\*\*\*'.

Leading Zero Blank:- This is an optional cell, to be decided by designer whether to display the Zero or Blank space in front of the Tag value. If the display data object is selected with "#####" format, and the value displayed on unit screen is with 3 digits (say 123), then with leading zero blank option enabled "Yes" then Value displayed on screen will be "123" and if disabled by saying "NO" then the same data will be displayed as "**00123**". By default Leading zero blank cell will display "Yes", i.e unit will always display blank space in front of the display data object tag value.

Tag address:- Numerical type tag which is to be defined for Display Data objects are displayed in this cell. Flyout from this cell will display the list of defined internal and PLC tags from tag data base. Selecting particular tag will display the respective tag in following Tag name cell.

Tag Name:- Name of the numerical type tag which is to be defined for Display Data objects are displayed in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Layout:-** To embed the display data object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout creation in start of this document.

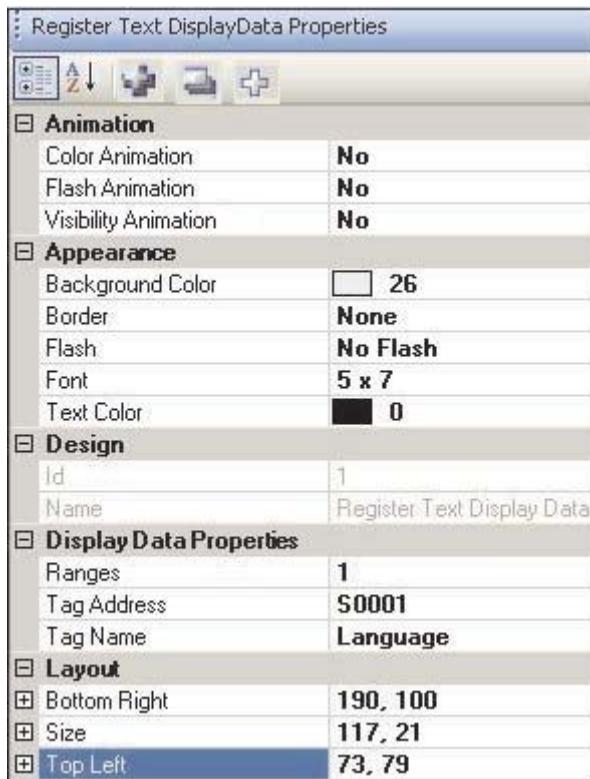
**Operations:-** Some of the mathematical operations that can be performed over the tag selected in display data object are add,sub,Mul,Divide. These operations with some operand value can be performed with simultaneous entry of the value in Tag. Two different operations can be performed on one tag.

First Operation:- The designer can have a math operations performed on the data. The default selection is NOP or no Operations. Operations which can be performed are add,Sub,Multiply and Divide. When any of the mathematical operation is selected , First Operand Cell is enabled, where user needs to enter the oper and value.

Second Operation :- The designer can have a second math operations performed on on the same numerical Data Entry object Tag. The default selection is NOP or no operation Operations which can be performed are addition ,Subtraction, Multiply and Divide. When any of the mathematical operation is selected, second Operand Cell is enabled, where user needs to enter the operand value.

### Message data Display Object:-

Select Message Data from Display Data object flyout. Place Display data object on screen and edit the desired properties of Register text display data object from Property grid window.



**Animation:-** Message display data object can be animated in various forms such as Changing the text Color or background color , Flashing the display data object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the display data object depending on the value of internal or PLC tag. Refer to the above page for more details of Animation.

#### Appearance:-

Background Color :- Background color of the message display data object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is White.

Border:- Border for message display data object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout. The border can be Single line border or double line border.

Flash:- To flash the message display data object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'.In this cell Designer needs to define the Flash Speed to be assigned to the numerical display data object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast. Object with all properties defined (Border,background,etc) gets flashed.

Font:- To display the message display data object on unit screen in various sizes. The message display data object supports only the software defined sizes.The available sizes in which this object can be set are 5x7,10x14,20x28,7x14.

Text Color:- To set the color to the message data display object in order to display the message for corresponding type tag on screen in desired color by designer. Text color of the message data display object varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

Name:- Display the name of the selected Display data object as "Register Text Display Data"

**Layout:-** To embed the display data object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section in start of this document.

**Note:-** Here one more option with Size is also enabled. Here the designer can define the desired size and accordingly the Coordinates will be changed.

**Ranges:-** Designer needs to define the tag from either Tag Address or Tag Name cell. From this cell designer has to define the ranges of the value for which message has to be displayed. Accordingly for each range of values message will have to be defined in the popup window of ranges.e.g: Total Value ranges for say data register tag D00 are defined as 3 as follows

Ranges	Text Message
1) 0-4	=Low,
2) 5-7	=Medium,
3) 8-10	=High

Hence if value of D00 varies within this range , then Message data display object embedded on unit screen will display corresponding Message.

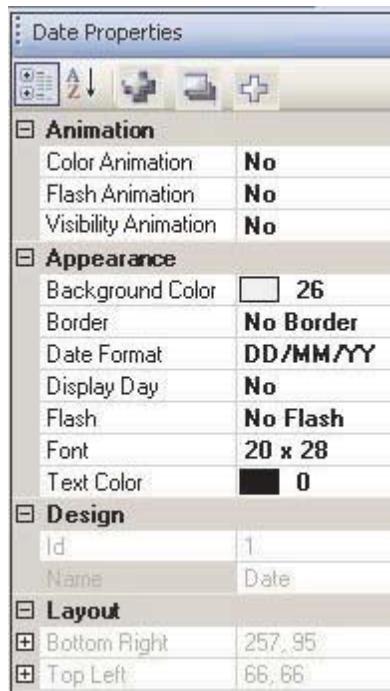
**Tag address(Yet not Implemented):-** Message data type tag which is to be defined for Message Data display objects are displayed in this cell. Flyout from this cell will display the list of defined internal and PLC tags from tag data base. Designer will have to select the tag on whose values ranges Text message is to be displayed.Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Name:-** Name of the numerical type tag which is to be defined for Message Display Data objects are displayed in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Designer will have to select the tag on whose values ranges Text message is to be displayed.Selecting particular tag name will display the respective Tag address in above Tag Address cell.

### 5.1.4 Date Object:-

To Display the Date from RTC on unit screen . Embed the Date object on Unit Screen.

On right side of the software screen , display parameters of the object can be defined from Property grid window. On software screen designer will observe the current dynamic time of PC. After downloading the application project in unit, if the unit does not have RTC then Date object on screen will show “??” marks.



**Animation:-** Date object can be animated in various forms such as Changing the text Color or background color, Flashing the display data object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the display data object depending on the value of internal or PLC tag.Refer to the above page for more details of Animation.

**Appearance:-**

**Background Color :-** Background color of the Date object can be changed through this cell.The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors.By default the background color for any product is White.

**Border:-**

Border for date object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout.The border can be Single line border or double line border.

**Date Format:-**

The desired date format can be set through this cell. By default the date format is DD/MM/YY. User can change the format to MM/DD/YY from flyout to this cell.

**Display Day:-**

To display the day of the week in combination with the date . This Day of week is displayed in front of the Date.By default Day of week is disabled(No) ,to set, user needs to select Yes from the flyout. The day of week is displayed with only first 3 characters of the day.

**Flash:-**

To flash the date object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'.In this cell Designer needs to define the Flash Speed to be assigned to the numerical display data object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast. Object with all properties defined (Border,backgroundetc) gets flashed.

**Font:-**

To display the date object on unit screen in various sizes. The message display data object supports only the software defined sizes.The available sizes in which this object can be set are 5x7,10x14,20x28,7x14.

**Text Color:-**

To set the text color to the date object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

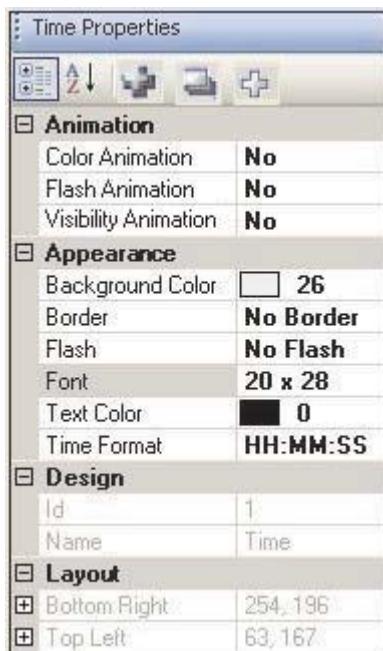
Name:- Display the name of the selected Date object as "Date"

**Layout:-** To embed the date object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section in start of this document.

### 5.1.5 Time Object:-

To Display the Time from RTC on unit screen . Embed the Time object on Unit Screen.

On right side of the software screen , display parameters of the object can be defined from Property grid window. On software screen designer will observe the current dynamic time of PC. After downloading the application project in unit, if the unit does not have RTC then Time object on screen will show “??” marks.



**Animation:-** Time object can be animated invarious forms such as Changing the text Color or background color, Flashing the display data object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the display data object depending on the value of internal or PLC tag. Refer to the above page for more details of Animation.

**Appearance:-**

Background Color :- Background color of the Time object can be changed through this cell.The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors.By default the background color for any product is White.

Border:- Border for Time object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout.The border can be Single line border or double line border.

Flash:- To flash the Time object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as ‘NO’. In this cell Designer needs to define the Flash Speed to be assigned to the numerical display data object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast. Object with all properties defined (Border,backgroundetc) gets flashed.

Font:- To display the Time object on unit screen in various sizes. The time object supports only the software defined sizes.The available sizes in which this object can be set are 5x7, 10x14, 20x28, 7x14.

Text Color:- To set the text color to the Time object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default data entry object color for any product is selected as Black.

Time Format:- The desired time format can be set through this cell. By default the Time format is HH:MM:SS. User can change the format to HH:MM from flyout to this cell.

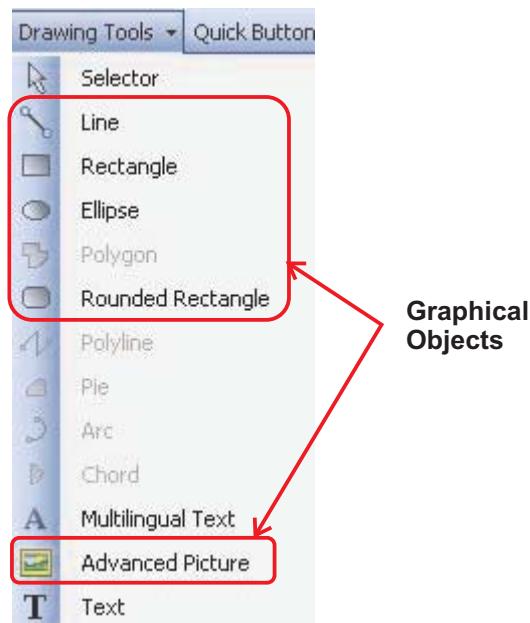
Name:- Display the name of the selected time object as “Time”

Layout:- To embed the time object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corrsponding pixel position of the placed object. For more details please refer Layout section in start of this document.

## 5.2 Graphical Objects

Graphics objects can be used to make the screen more user friendly by drawing pictures.

These objects can be used for representing some pictures,tags,logos etc..on user screen to enhance the GUI of application project.

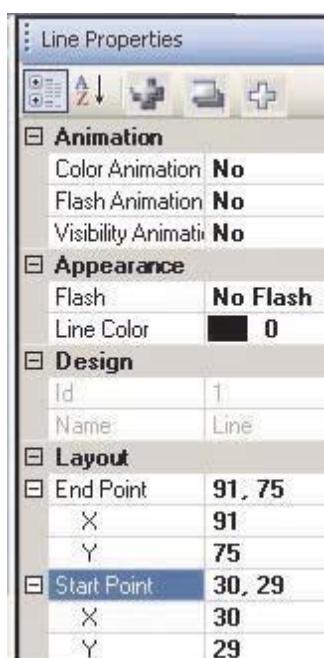


Following are the graphical objects:

1. Line
2. Rectangle
3. Ellipse
4. Rounded Rectangle
5. Picture

### 5.2.1 Line

To draw the line of desired length on unit screen at any location and in any direction. This line can be drawn with the help of Mouse pointer. In software screen , display parameters required to draw line can be set in Property window .



**Animation:-** Line object can be animated in various forms such as Changing the line Color, Flashing the line object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the line object depending on the value of internal or PLC tag. Refer to the Animation section for more details.

#### **Appearance:-**

**Flash:-** To flash the Line object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'. In this cell designer needs to define the Flash Speed to be assigned to the Line object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast.

**Line Color:-** To set the color to the Line object. Colors for these objects varies from product to product.

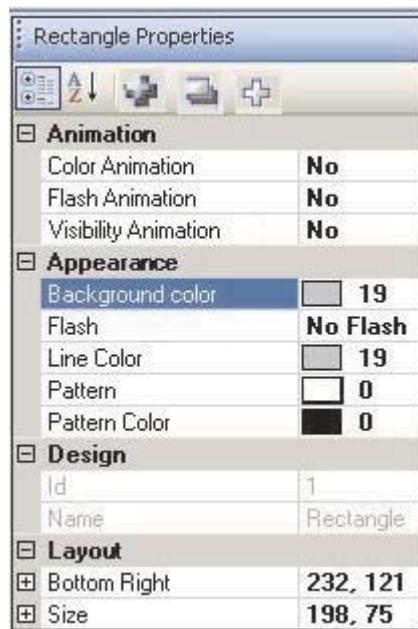
Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default color for the Line object is Black.

**Name:-** Display the name of the selected object as "Line".

**Layout:-** To embed the line object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object.

### **5.2.2 Rectangle**

To embed the rectangle of desired size on unit screen at any location and in any direction. Rectangle object can be drawn with the help of Mouse pointer. In software screen , display parameters required to draw rectangle can be set in Property window.



**Animation:-** Rectangle object can be animated in various forms such as Changing the border line and background Color of rectangle object, Flashing the object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the Rectangle object depending on the value of internal or PLC tag. Refer to the Animation section for more details.

**Appearance:-**

Background Color :- Background color of the Rectangle object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for rectangle object is Grey(19).

Flash:- To flash the rectangle object on unit screen can be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'.

In this cell Designer needs to define the Flash Speed to be assigned to the Line object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast.

Line Color:- To set the color to the border Line of rectangle object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default color of line of rectangle object for any product is selected as Grey(19).

Pattern:- Different fill pattern of the rectangle object can be set through this cell. The available patterns from flyout are selected from this cell. Some of the available patterns are as shown in figure. By default the fill pattern defined is white.



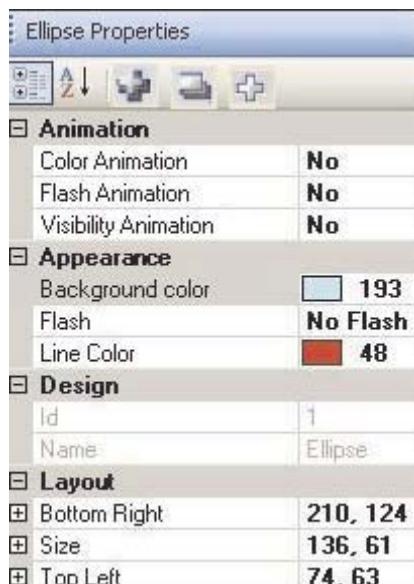
Pattern color:- To set the color to the patterns selected in above cell for Rectangle object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default color of line of rectangle object for any product is selected as Black(0).

Name:- Display the name of the selected object as "Rectangle".

**Layout**:- To embed the rectangle object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

### 5.2.3 Ellipse

To draw the ellipse of desired size on unit screen at any location and in horizontal or vertical direction . This ellipse can be drawn with the help of Mouse pointer. In software screen , display parameters required to draw ellipse can be set in Property window



**Animation:-** Ellipse object can be animated in various forms such as Changing the line and background Color of ellipse ,Flashing the ellipse object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the ellipse object depending on the value of internal or PLC tag. Refer to the Animation section for more details.

**Appearance:-**

Background Color :- Background color of the Ellipse object can be changed through this cell.The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors.By default the background color for any product is White.

Flash:- To flash the ellipse object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'. In this cell Designer needs to define the Flash Speed to be assigned to the Line object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast.

Line Color:- To set the line color to the Ellipse object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default line object color for any product is selected as Black.

Name:- Display the name of the selected object as "Ellipse".

**Layout:-** To embed the line object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object.

#### 5.2.4 Rounded Rectangle

To draw the ellipse of desired size on unit screen at any location and in horizontal or vertical direction . This ellipse can be drawn with the help of Mouse pointer. In software screen , display parameters required to draw ellipse can be set in Property window.



**Animation:-** Rounded rectangle object can be animated in various forms such as Changing the line and background Color of rounded rectangle, Flashing the rounded rectangle object at various speed depending on the tag value either internal tag or PLC tag, Show/hide the rounded rectangular object depending on the value of internal or PLC tag. Refer to the Animation section for more details.

#### **Appearance:-**

Background Color :- Background color of the Rounded rectangle object can be changed through this cell.

The flyout will display color dialog box, with supported colors for the product If product is with Mono chrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is White.

Flash:- To flash the Rounded rectangle object on unit screen can also be set through this cell. This cell is enabled only if Flash Animation cell from Animation Section is Disabled or selected as 'NO'. In this cell Designer needs to define the Flash Speed to be assigned to the Line object embedded on Screen. Flash speed are defined as Flash-Slow, Flash-Medium or Flash-Fast.

Line Color:- To set the line color to the Rounded rectangle object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default line object color for any product is selected as Black.

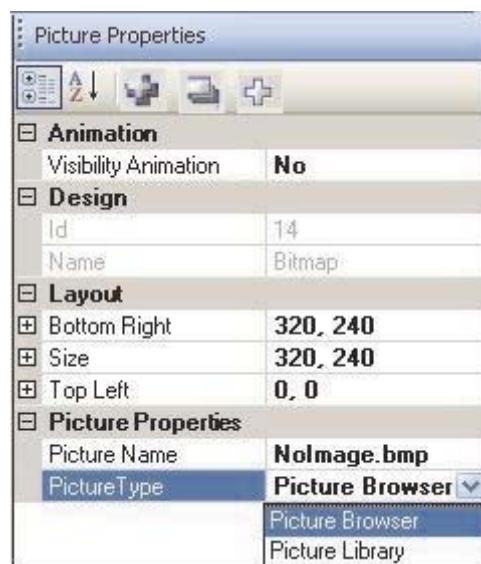
Name:- Display the name of the selected object as "Rounded Rectangle".

**Layout**:- To embed the line object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object

#### **5.2.5 Pictures**

A bitmap can be drawn on the unit screen display. The bitmap cannot be larger than the display size of the unit's graphics display. The maximum size bitmap depends on the product.

To embed the real picture photographs of Logo, icons, picture of process plant etc. The bitmap object that can be embedded in picture object are "\*.bmp", "\*.jpg".



**Animation:-** For picture object embedded on unit screen can be animated only for Hide/Show animation i.e this picture object can be hidden or shown at the value range of assigned tag. This tag can be either internal or PLC tag. Please refer the Show/Hide animation from Animation section.

**Name:-** Display the name of the selected object as "Bitmap".

**Layout:-** To embed the Picture object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object. Maximum size of the picture should not exceed the graphic display size of the unit screen.

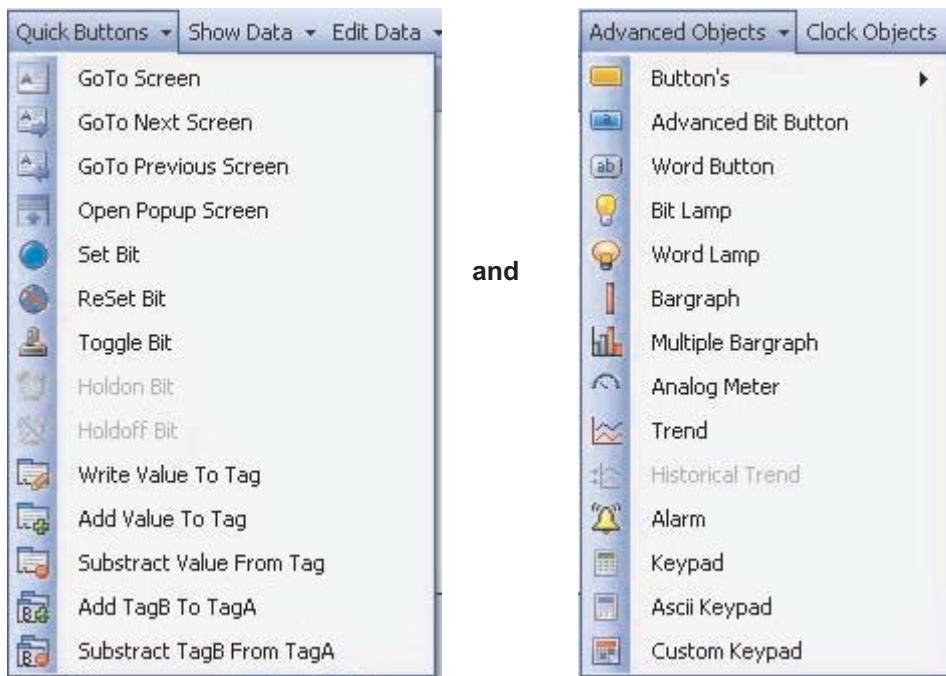
**Picture Properties:-**

**Picture name:-** To select the name of the picture or bitmap to be embedded on screen from either picture library or from picture folder. In this cell block with shortcut to browser window is available to select the picture needed to be embedded on unit screen. Browser window will either ask for the path from local disk or will display the picture library available with the FlexiSoft Software, this depends upon the option selected in Picture Type Cell flyout.

**Picture Type:-** In this cell, designer has two options to select the picture. Either from local disk or from picture library already available with the FlexiSoft software. Selecting Picture browser will popup the browser window from picture name cell with path for local disk and selecting Picture library will display the available pictures from FlexiSoft software picture library

### 5.3 Wizards

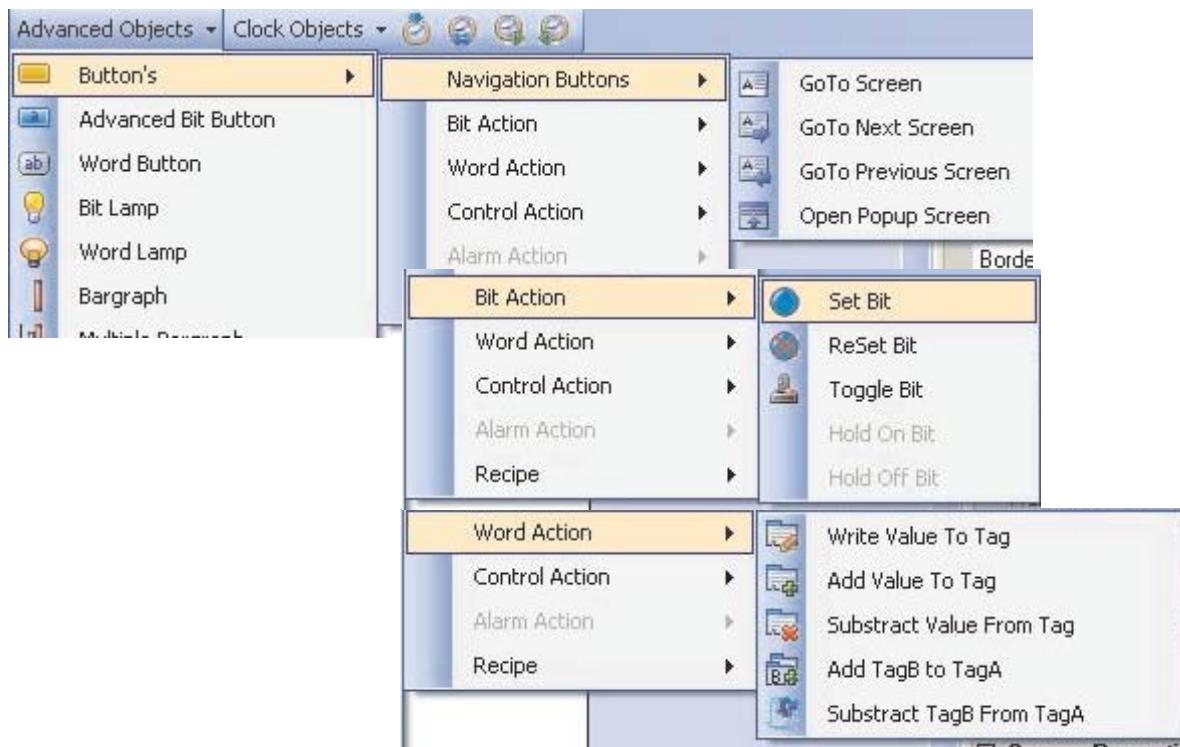
Following are the graphical wizards used for an application project:



and

1. Button object :
  - a) Button
  - b) Advanced Bit Button
  - c) Word Button
  - d) Go to Screen , Go to Next Screen , Go to Previous Screen
  - e) Open Popup screen button
  - f) Set bit Button, Reset Bit button,Toggle bit button
  - g) Write value to Tag Button,Add Value to Tag Button,Subtract value from Tag button, Add Tag B to A button,Subtract Tag B from Tag A button.
  - i) Recipe
2. Lamp Object:
  - a) Bit Lamp
  - b) Word Lamp
3. Analog Meter
4. Bargraph
5. Multiple Bargraph
6. Real Trend Display
7. Keypad
  - a) Keypad
  - b) Ascii Keypad
  - c) Custom Keypad

### 5.3.1 Button Objects



These are the objects to which some task can be assigned. Some button objects have predefined task. These task can be assigned to any of the tag from tag list. With combination of these tasks through these button objects, designer can perform logical operations to perform the process action. Each button objects when embedded on screen have some properties which can be changed from property grid window. Following are some common button objects properties which are optional and can be set by designer for any type of button objects.

#### **Common Button Objects Properties:-**

**Visibility Animation**:- User can show or hide the object using this property. For the detailed operation, please refer section 11.8.

#### **Appearance** :-

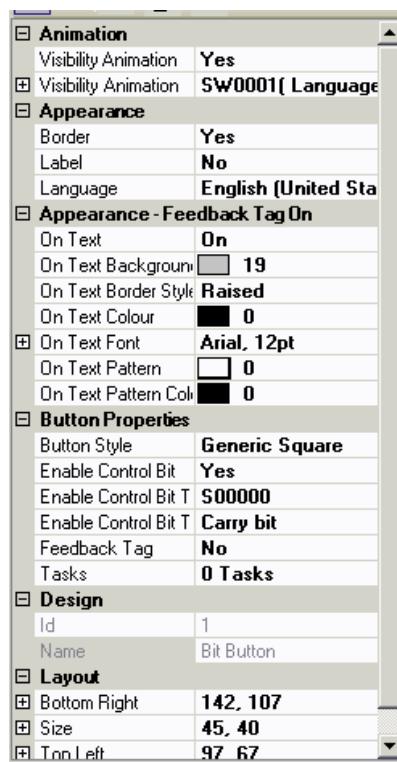
**Language**:- Language to be set for the text of the button object. Flyout will show the list of multiple languages defined in language settings for the application project.

#### **Appearance-Feedback Tag On**:-

**Border Style**:- To set the Border to the button object to have a better look of the button object . Various border style that can be set through the Flyout of this cell are as follows:

- a.Raised
- b.Etched
- c.Bump
- d.Sunken
- e.Frame
- f.None
- g.Flat

Observe the object on screen and corresponding Border style is set through property grid window



On text Background color:- To Set the background color for the button object. Designer can define the any available color as per the product display type selected. By default the background color of button object is Grey.

On Text Font:- Properties related to font of text is listed. This On text font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from following cell.

<b>On text Font</b>	<b>Arial, 9pt</b>
Name	ab <b>Arial</b>
Size	<b>9</b>
Bold	<b>False</b>
Italic	<b>False</b>
Strikeout	<b>False</b>
Underline	<b>False</b>

Name:- To define the font name to be assigned for Text of the Button object. flyout to this cell will list out the available font type in your system OS. Default is 'Arial'.

Size:- To define the the font size to be assigned to the text of the button object. Here the designer needs to enter the number to define the desired font size. Default font size in this cell is '9'.

Bold:- To define the Font of the text in button object in normal form or in Bold Form. This cell is optional, by default this cell has 'False' information , i.e. font selected is with 'Normal' type. If this cell information is defined to be 'True' then font form selected will be '**Bold**'.

Italic:- To define the font of text in button object in normal or in Italic form. By default this cell has 'False' information i.e text in this object is in 'Normal' form, if this cell information is changed to 'True' then Text in object is in '*Italic*' form

Strikeout:- The text in the button object can be striked out. By default this cell has informaion as 'False' i.e the text is in 'Normal' form. If the cell information is changed to 'True' the text displayed is with '**Strikeout**' form.

Underline:- The text in the button object can be underlined. By default this cell has informaion as 'False' i.e the text is in 'Normal' form without underline. If the cell information is changed to 'True' the text displayed is with "Underlined" form.

On Text Pattern:- The various patterns to the buttons that can be assigned are shown in pattern dialog box. By default the button pattern is White.



On Text Pattern color:- On text pattern color can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is Black.

On text Text Color:- On text Text color on the button object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is Black.

Text:- Text on the button object can be changed. Any alphanumeric characters can be written on the button object.

### **Button Properties:-**

Button Style:- Button object can be displayed in various different shapes and style. Shape and styles which can be assigned to button objects can be circle, Generic square, Rounded rectangle. Button objects property can be assigned to any of the user defined image or to any picture from picture library or even kept as invisible button i.e the defined touch screen area of unit is kept as blank / invisible , but that area acts as button to perform the defined task. By default the button style is with 'Generic Square'.



Enable Control Bit:- User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

Enable control Bit Tag address: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

Feedback tag:- The button can be assigned with the state tag of particular bit tag. So that button can perform two operations , one with as per the task assigned to button and other with state of Bit tag can be displayed. Enabling this Feedback tag cell by entering "Yes", two more cells related to Feedback tag are also enabled.FB Tag address and FB Tag Name. These two cells are with respect to the tag of which status is to be displayed in Button Object. Making changes in FB Tag address will display the corresponding name of tag in FB Tag Name cell and vice versa.

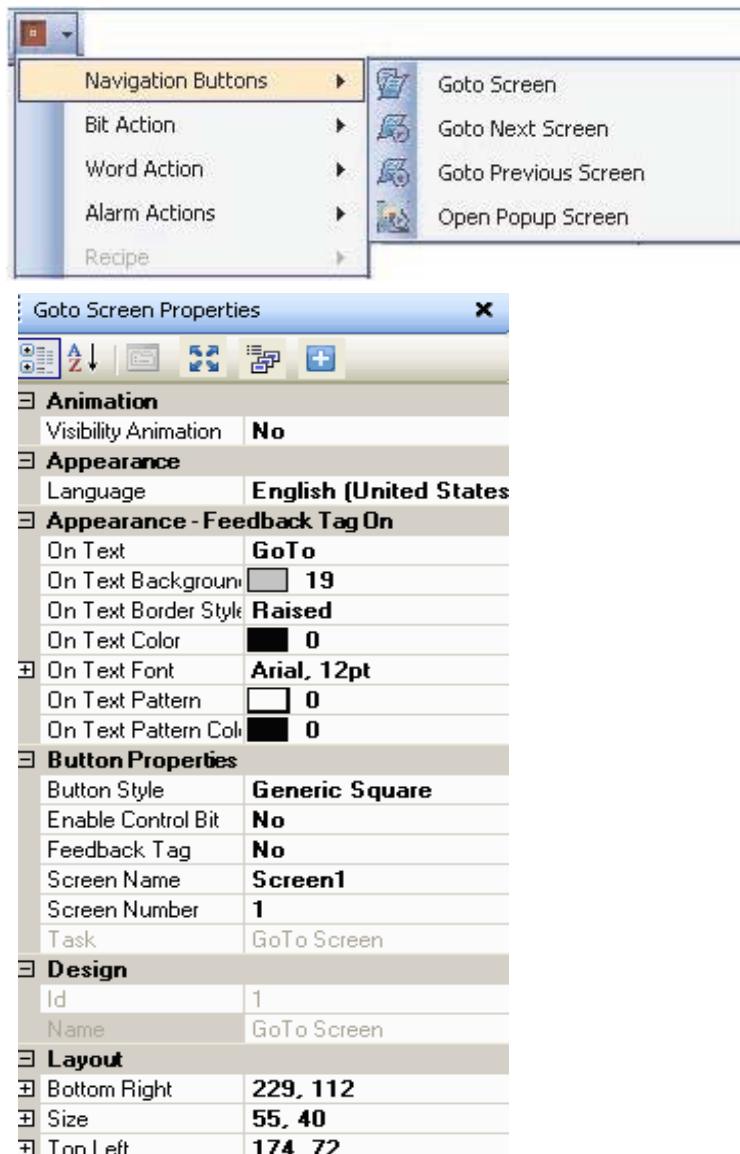
Name:- Display the name of the selected Button object.

### **Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section

**Navigation Buttons:**

Buttons which are used to navigate from one base screen to another base screen or to open the popup screen. These are the predefined tasks with direct button access.

**Appearance:-**

**Visibility Animation:** User can show or hide the screen objects using this property. For detail operation refer section 11.8.

**Language:** To set the desired language from the list of languages defined in Language settings of application project.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section of 5.3.1

**Enable Control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

**Note:** This feature is not supported in FP4020/30 models.

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section of 5.3.1.

Screen Name:- The name of the available base screen in application project are listed from flyout. Changing the screen name among the list will change the corresponding Screen number in following Screen Number cell. Defining the screen name in this cell will force the button to switch to the particular base screen .

Screen Numer:- The number of the available base screen in application project are listed from flyout. Changing the screen number among the list will change the corresponding Screen name in above Screen name cell. Defining the screen number in this cell will force the button to switch to the particular base screen.

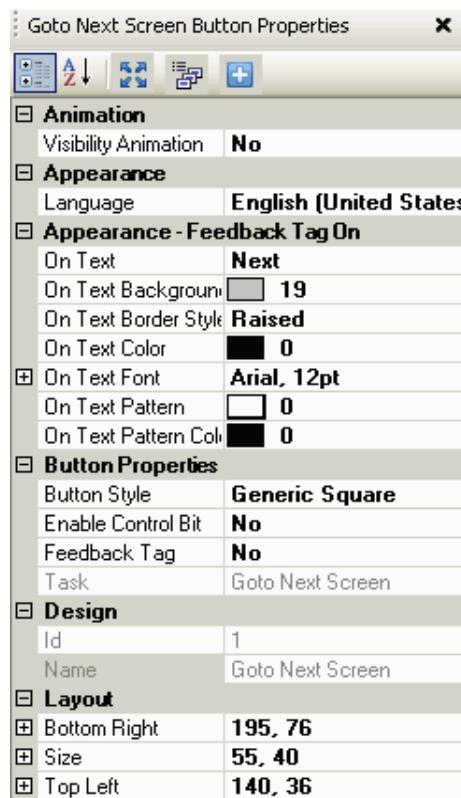
Task:- This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Go To Screen".

Name:- Display the name of the selected Button object as "Go to".

Layout:- To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

#### a) Go To Next Screen:-

This button object is used to switch to the next screen which is being already defined in project application. Properties which can be set in for this button object can be defined from the property grid window. With this button task user can switch to the next Base screen only. This object feature can be tested and confirmed through Offline simulation / Run mode also



Visibility Animation:- User can show or hide the screen objects using this property. For detail operation, refer section 11.8

#### Appearance:-

Language: To set the desired language to the text of button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

#### Appearance -Feedback tag On:-

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

Button Style:- To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section of 5.3.1.

Enable Control Bit:- User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

Enable control Bit Tag address: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models*

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section of 5.3.1.

Task:- This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Go To Next Screen".

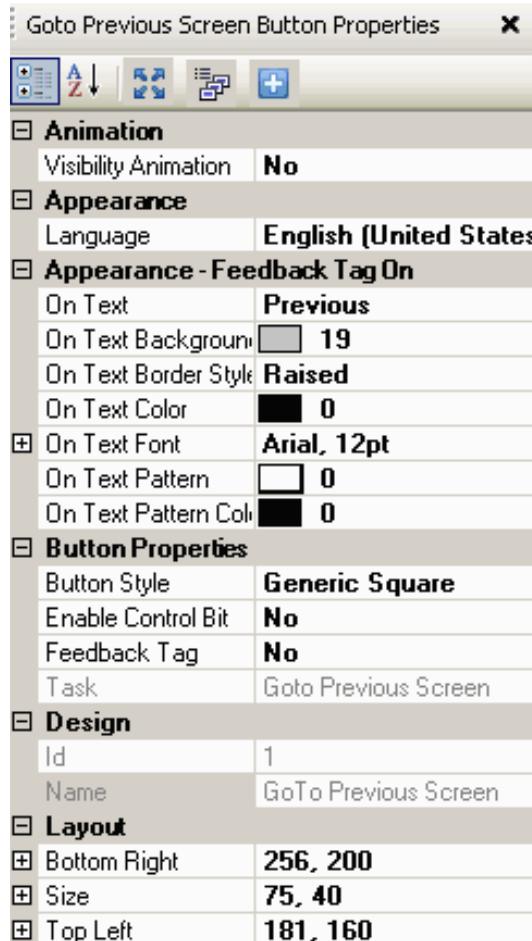
Name:- Display the name of the selected Button object as "NEXT".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**b) Go To Previous Screen:-**

This button object is used to switch to the Previous screen which is being already defined in project application. Properties which can be set in for this button object can be defined from the property grid window. With this button task user can switch to the Previous Base screen only. This object feature can be tested and confirmed through Offline simulation / Run mode also.



**Visibility Animation:** User can show or hide the screen objects using this property. Refer section 11.8 for detail operation.

#### **Appearance:-**

**Language:-** To set the desired language to the text of button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

#### **Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

#### **Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section of 5.3.1.

**Enable Control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section of 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Go To Previous Screen".

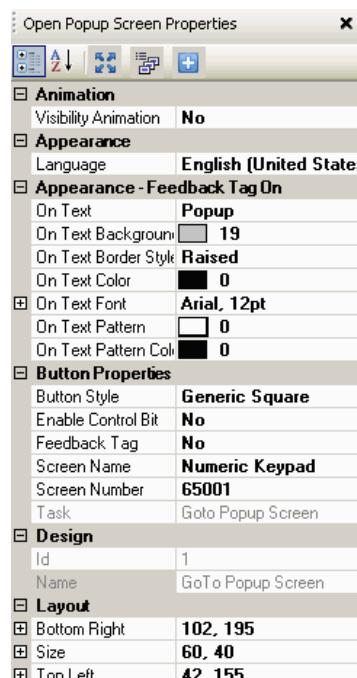
**Name:-** Display the name of the selected Button object as "Prev".

#### **Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

#### **c) Open Popup screen:-**

This button object is used to switch to the popup screen which is being already defined in project application. Properties which can be set in for this button object can be defined from the property grid window. With this button task user can switch to the next Base screen only. This object feature can be tested and confirmed through Offline simulation / Run mode also.



**Visibility Animation:-** User can show or hide the screen objects using this property. Please refer section 11.8 for detailed operation.

**Appearance:-**

**Language:-** To set the desired language, to the text of button object from, the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section of 5.3.1.

**Enable control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section of 5.3.1.

**Screen Name:-** The name of the available popup screen in application project are listed from flyout.

Changing the screen name among the list will change the corresponding Screen number in following Screen Number cell. Defining the screen name in this cell will force the button to switch to the particular popup screen.

**Screen Numer:-** The number of the available popup screen in application project are listed from flyout of this cell. Changing the screen number among the list , will change the corresponding Screen name in above Screen name cell. Defining the screen number in this cell will force the button to switch to the particular popup screen.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Go To Popup Screen".

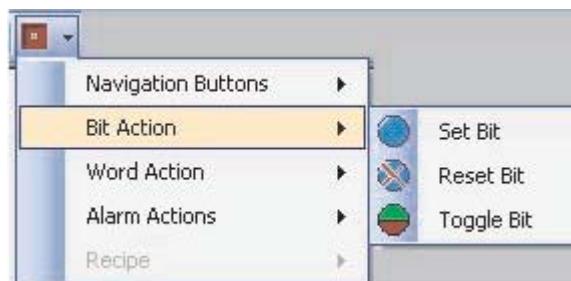
**Name:-** Display the name of the selected Button object as "Popup".

**Layout:-**

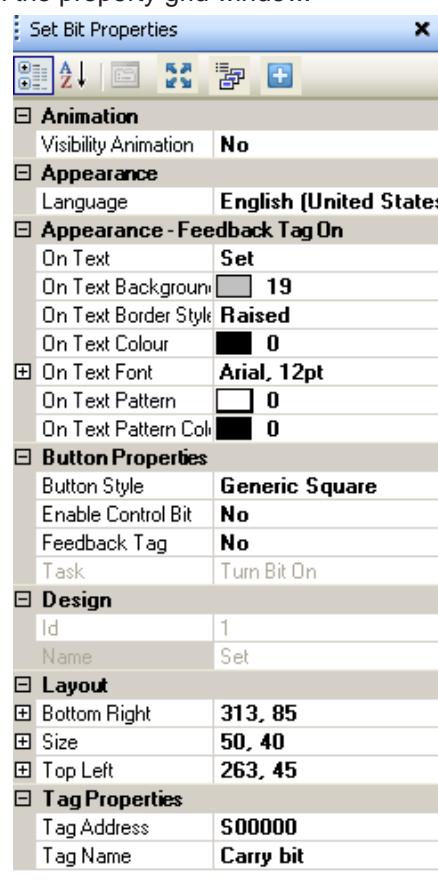
To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Bit Action:-**

To change the status of Coil/Bit type tag. Through these bit action buttons user can take the actions on Bit type tags. These are the predefined tasks with direct button access. Designer can set, Reset or Toggle the bit / Coil tag.

**a) Set Bit:-**

This button object is used to Set the Bit type tag. Properties which can be set in for this button object can be defined from the property grid window.



**Visibility Animation:-** User can show or hide the data entry object using this property. Please refer section 11.8 for detailed operation.

**Appearance:-**

**Language:-** To set the desired language to the text of button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

Button Style:- To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section of 5.3.1.

Enable control Bit:- User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

Enable control Bit Tag address: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section of 5.3.1.

Task:- This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Turn Bit On".

Name:- Display the name of the selected Button object as "Set".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

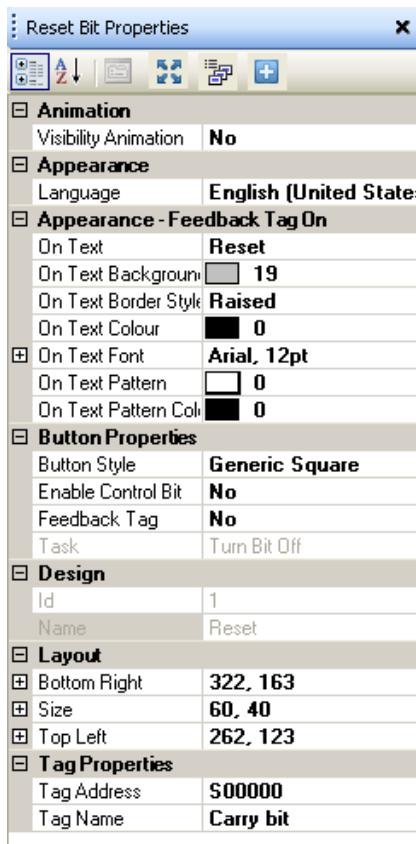
**Tag Properties:-**

Tag address:- Type tag which has to be Set or to be Turned On can be defined in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

Tag Name:- Name of the bit type tag which is to be set or to be turned on is to be in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**b) Reset Bit:-**

This button object is used to Reset or to Turn Off the the Bit type tag. Properties which can be set in for this button object can be defined from the property grid window.



Visibility Animation: User can show or hide the data entry object using this property. Please refer section 11.8 for detailed operation.

Appearance:-

Language:- To set the desired language to the text of button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

Button Style:- To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

Enable control Bit:- User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

Enable control Bit Tag address: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

Task:- This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Turn Bit Off".

Name:- Display the name of the selected Button object as "Reset".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Tag Properties:-**

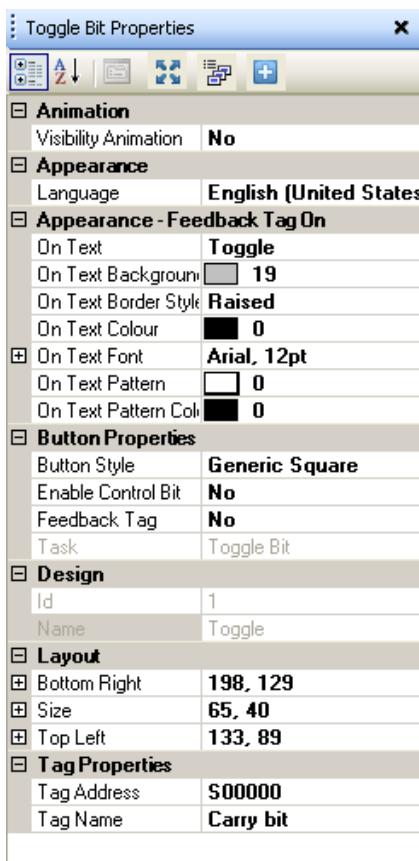
Tag address:- Type tag which has to be reset or to be Turned Off can be defined in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

Tag Name:- Name of the bit type tag which is to be reset or to be turned off is to be defined in this cell.

Flyout from this cell will display the list of Bit type Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**c) Toggle Bit:-**

This button object is used to toggle the Bit type tag. Properties which can be set in for this button object can be defined from the property grid window.



**Visibility Animation:-** User can show or hide the data entry object using this property. Refer section 11.8 for detailed information.

**Appearance:-**

**Language:-** To set the desired language to the text of button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Enable control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:-** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Toggle Bit".

**Name:-** Display the name of the selected Button object as "Toggle".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Tag Properties:-**

**Tag address:-** Type tag which has to be toggled is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

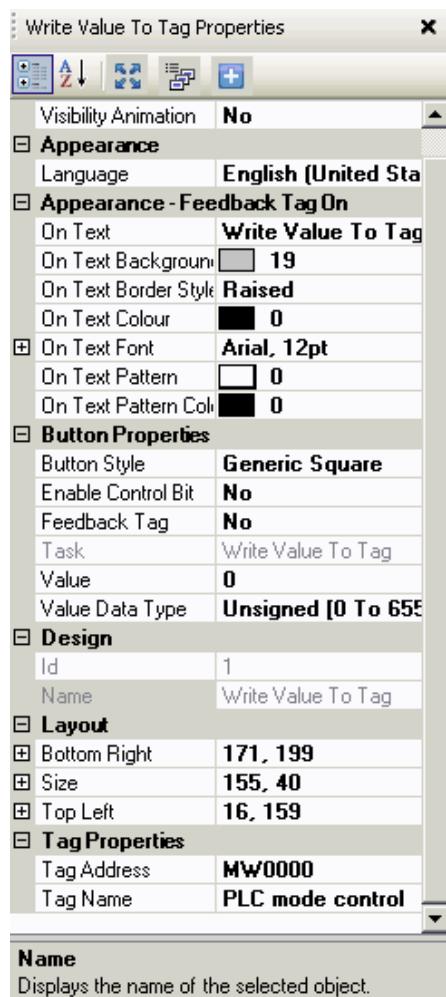
**Tag Name:-** Name of the bit type tag which is to be toggled is to be defined in this cell. Flyout from this cell will display the list of Bit type Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Word Action:-**

To perform some constant value mathematical operations. Through these word action buttons user can write constant , add constant ,subtract constant , Add or subtract to/from one tag to an another tag. These are the predefined tasks with which direct action on numerical tags can be performed.

**a) Write Value To Tag**

To write some constant value in a numerical type of 2 Byte word or 4 byte word.This word action button objects has predefined task to write some constant value in Numerical data type tag.



**Visibility Animation:** User can show or hide the screen objects using this property. Please refer section 11.8 for detailed operation.

**Appearance:-**

**Language:-** To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

Button Style:- To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

Enable control Bit:- User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

Enable control Bit Tag address: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

Task:- This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Write Value to Tag".

Value:- In this cell the constant value is to be defined, which is expected to be written in the tag through "write value to tag" word action button. The value range varies with the selection of Tag type (2 byte/4 byte) in tag address cell. If Tag is 2 byte word then maximum constant value can be written in value cell is 0-65535, and if tag is 4 byte word then maximum constant value that can be written in Value cell is 4294967295. By default the value in this cell is 0.

Value -Datatype:- Data type of the value to be entered through the word action button is to be defined. Flyout to this cell will list out the various available data types with its value ranges as per the tag type selected in Tag Address. List of datatypes are unsigned, Signed ,Hexadecimal, BCD, Binary with 2 byte word range and if tag in which value is to be written is 4 byte then list of data types are unsigned, Signed, Hexadecimal, BCD, Binary, Float with 4 byte word range. By default the datatype is unsigned.

Name:- Display the name of the selected Button object as "Write Value to Tag".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

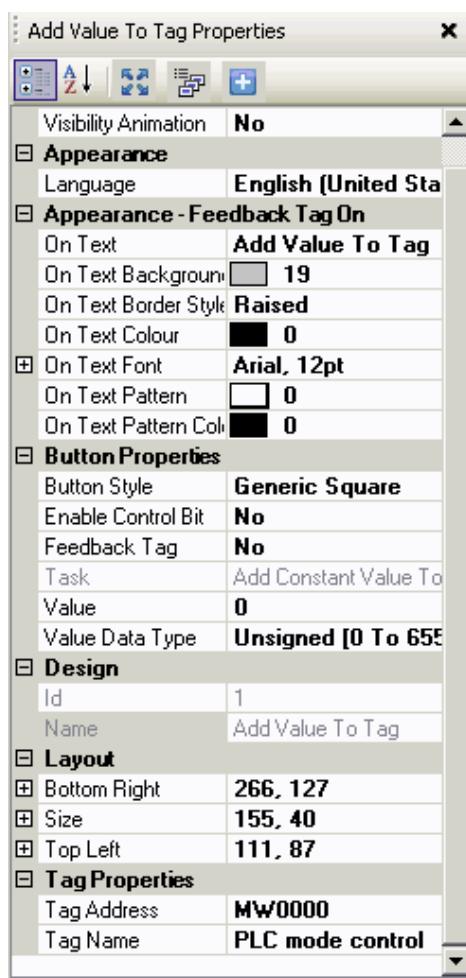
**Tag Properties:-**

Tag address:- Type tag in which constant value is to be written is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

Tag Name:- Name of the numerical type tag in which constant value is to be written is to be defined in this cell. Flyout from this cell will display the list of numerical type Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**b) Add Value To Tag**

To add some constant value in a numerical type of 2 Byte word or 4 byte word. This word action button objects has predefined task to add some constant value in Numerical data type tag.



**Visibility Animation:-** User can show or hide the screen objects using this property. Refer section 11.8 for detailed operation.

#### **Appearance:-**

Language:- To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

#### **Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

#### **Button properties:-**

Button Style:- To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

Enable control Bit:- User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

Enable control Bit Tag address: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

Task:- This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Add Constant Value To Tag".

Value:- In this cell the constant value is to be defined, which is expected to be added in the tag through "Add constant value to tag" word action button. The value range varies with the selection of Tag type (2 byte/4 byte) in tag address cell. If Tag is 2 byte word then maximum constant value can be written in value cell is 0-65535, and if tag is 4 byte word then maximum constant value that can be written in Value cell is 4294967295. By default the value in this cell is 0.

**Value -Datatype:-** Data type of the value to be added through the word action button is to be defined. Flyout to this cell will list out the various available data types with its value ranges as per the tag type selected in Tag Address. List of data types are Unsigned, Signed , Hexadecimal, BCD, Binary with 2 byte word range and if tag in which value is to be written is 4 byte then list of data types are Unsigned, Signed, Hexadecimal, BCD, Binary, Float with 4 byte word range. By default the datatype is Unsigned.

Name:- Display the name of the selected Button object as "Add Value to Tag".

#### **Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

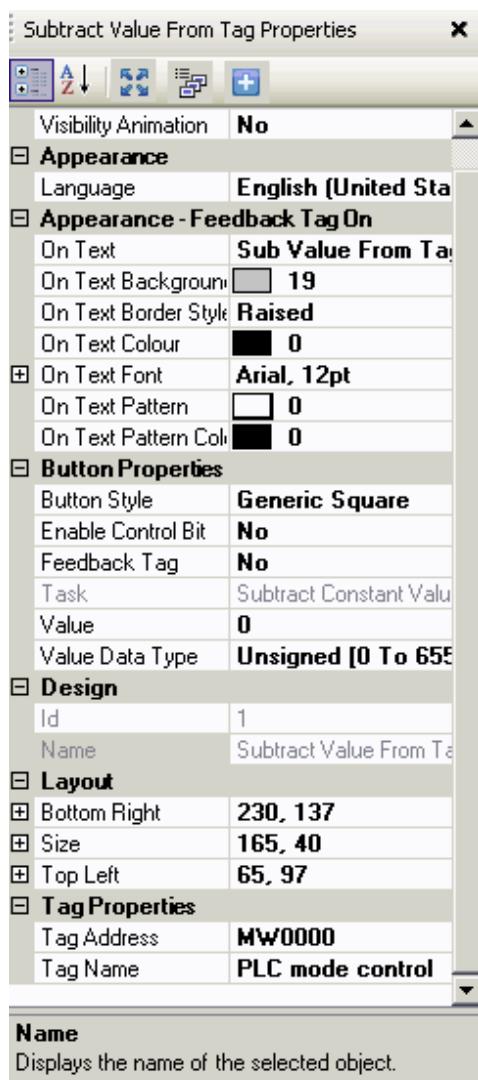
#### **Tag Properties:-**

**Tag address:-** Type tag in which constant value is to be added is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Name:-** Name of the numerical type tag in which constant value is to be added is to be defined in this cell. Flyout from this cell will display the list of numerical type Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

### **c) Subtract Value From Tag**

To subtract some constant value from the numerical type of 2 Byte word or 4 byte word. This word action button objects has predefined task to subtract some constant value from Numerical data type tag.



**Visibility Animation:-** User can show or hide the screen objects using this property. Refer section 11.8 for detailed operation.

**Appearance:-**

**Language:-** To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Enable control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Subtract Constant Value From Tag".

**Value:-** In this cell the constant value is to be defined, which is expected to be subtracted from the tag through "Subtract constant value from tag" word action button. The value range varies with the selection of Tag type (2 byte/4 byte) in tag address cell. If Tag is 2 byte word then maximum constant value can be written in value cell is 0-65535, and if tag is 4 byte word then maximum constant value that can be written in Value cell is 4294967295. By default the value in this cell is 0.

**Value -Datatype:-** Data type of the value to be subtracted through the word action button is to be defined. Flyout to this cell will list out the various available data types with its value ranges as per the tag type selected in Tag Address. List of datatypes are unsigned, Signed ,Hexadecimal, BCD, Binary with 2 byte word range and if tag in which value is to be written is 4 byte then list of data types are unsigned, Signed, Hexadecimal, BCD, Binary, Float with 4 byte word range. By default the datatype is unsigned.

**Name:-** Display the name of the selected Button object as "Subtract Value From Tag".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

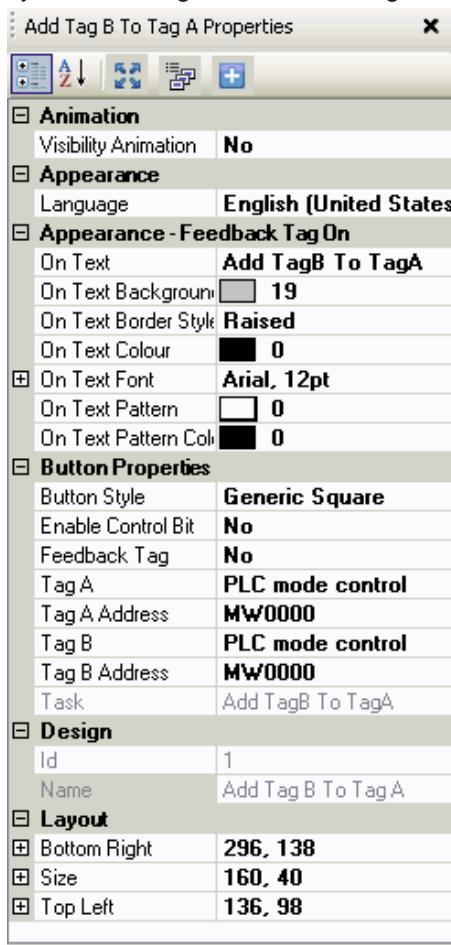
**Tag Properties:-**

**Tag address:-** Type tag from which constant value is to be subtracted is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag database. Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Name:-** Name of the numerical type tag from which constant value is to be subtracted is to be defined in this cell. Flyout from this cell will display the list of numerical type Tag names already defined in Tag Database for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell

**d) Add TagB To Tag A**

To add a value from some tag to an another tag. This word action button objects has predefined task to add value directly from one tag to an another tag.



**Visibility Animation:** User can show or hide the screen objects using this property. For detailed operation refer section 11.8

**Appearance:-**

**Language:-** To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Enable control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Add Tag B To Tag A".

Tag A:- Name of the tag in which value from another tag is to be added is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag name from the list will display the corresponding Tag Address in followin "Tag A Address" Cell.

Tag Address:- Tag address in which value from another tag is to be added is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag from the list will display the corresponding Tag Address in above "Tag A" Cell.

Tag B:- Name of the tag whose value is to be added in Tag A Value is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag name from the list will display the corresponding Tag Address in following "Tag B Address" Cell.

Tag B address:- Tag address whose value is to be added in Tag A address is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag from the list will display the corresponding Tag Address in above "Tag B"Cell.

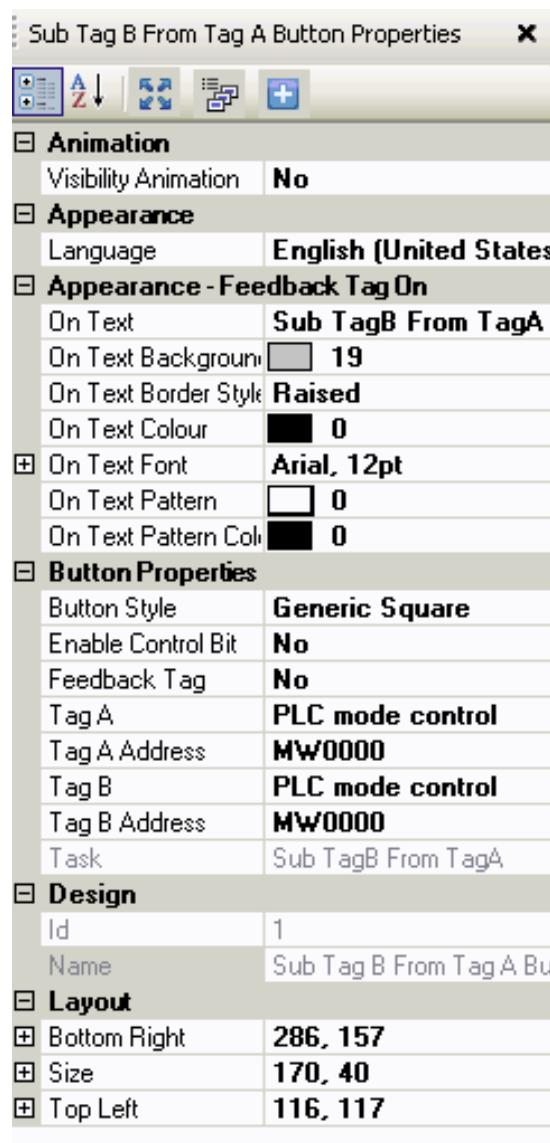
Name:- Display the name of the selected Button object as "Add Tag B to Tag A".

#### Layout:-

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

#### e) Subtract TagB From Tag A

To subtract a value of some tag from the value of an another tag. This word action button objects has predefined task to subtract a value of one tag from value of another Tag.



**Visibility Animation:-** User can show or hide the screen objects using this property. Refer section 11.8 for detailed operation.

**Appearance:-**

**Language:-** To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Enable control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Sub TagB From Tag A".

**Tag A:-** Name of the tag from which value of another tag is to be substracted is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag name from the list will display the corresponding Tag Address in following "Tag A Address"Cell.

**Tag A address:-** Tag address from which value from another tag is to be substracted is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag from the list will display the corresponding Tag Address in above "Tag A" Cell.

**Tag B:-** Name of the tag whose value is to be substraced from value of Tag A is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag name from the list will display the corresponding Tag Address in followin "Tag B Address" Cell.

**Tag B address:-** Tag address whose value is to be substracted from value of Tag A address is to be defined in this cell. The Flyout will list out the available numerical tags. Selecting any of the numerical tag from the list will display the corresponding Tag Address in above "Tag B" Cell.

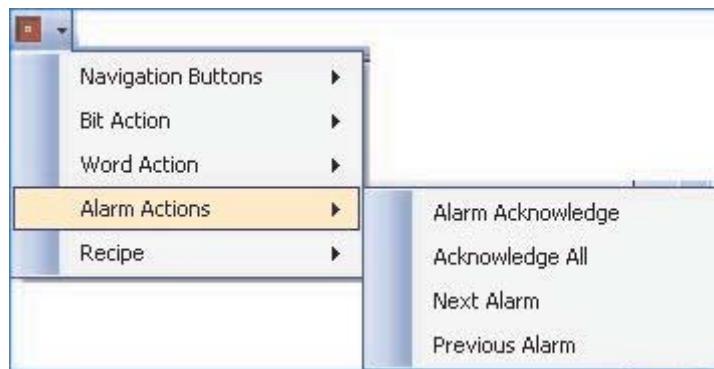
**Name:-** Display the name of the selected Button object as "Subtract Tag B from Tag A".

**Layout:-**

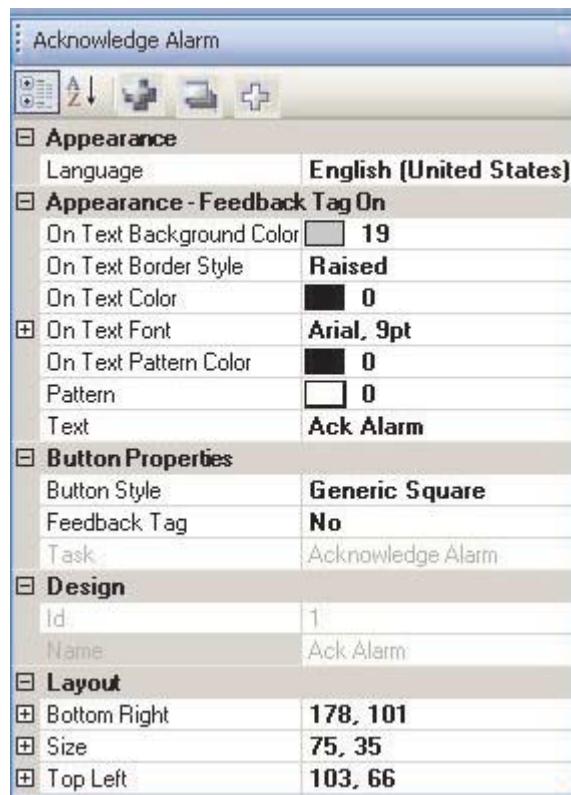
To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Alarm Actions:-**

To perform some operation related to Real Alarms embedded on screen. These are the predefined tasks with which direct action on alarm object embedded on screen can be performed. Hence with this Alarm Actions button objects direct access to Acknowledge Single or all Alarms, to switch to Next or Previous Alarm number within same Alarm display object can be performed.

**a) Alarm Acknowledge:-**

To acknowledge the top alarm displayed in Display Alarm object. Only Real alarms can be acknowledged through button action. At one press only one alarm is acknowledged. If alarm is acknowledged then ACK Status flag from Alarm display Window is changed to 'Yes' or 'Y'. If specific alarm bit is turned off and then if alarm is acknowledged then only the alarm information disappears from window else only ACK status is displayed with Y or N.

**Appearance:-**

Language:- To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Acknowledge Alarm".

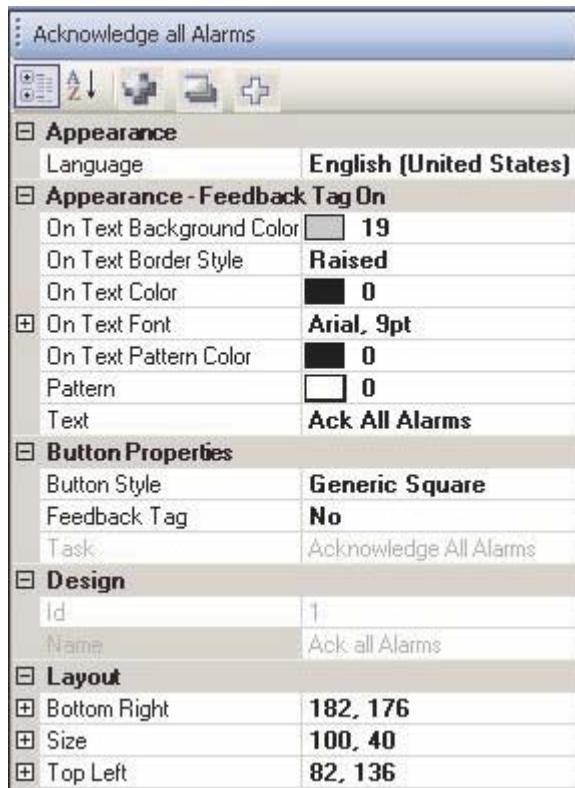
Name:- Display the name of the selected Button object as "Ack Alarm".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**b) Acknowledge All:-**

To acknowledge all alarms at a time from display Alarm object. Only Real alarms can be acknowledged through this button action. At one press all alarms are acknowledged. If all alarms are acknowledged then, only the alarms whose respective bits are in Off state gets disappeared from the Alarm display window, remaining all alarms shows the On time and off time and Ack Status of respective alarm bits as 'Yes' or 'Y'.

**Appearance:-**

**Language:-** To set the desired language to the text of word action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Acknowledge All Alarms".

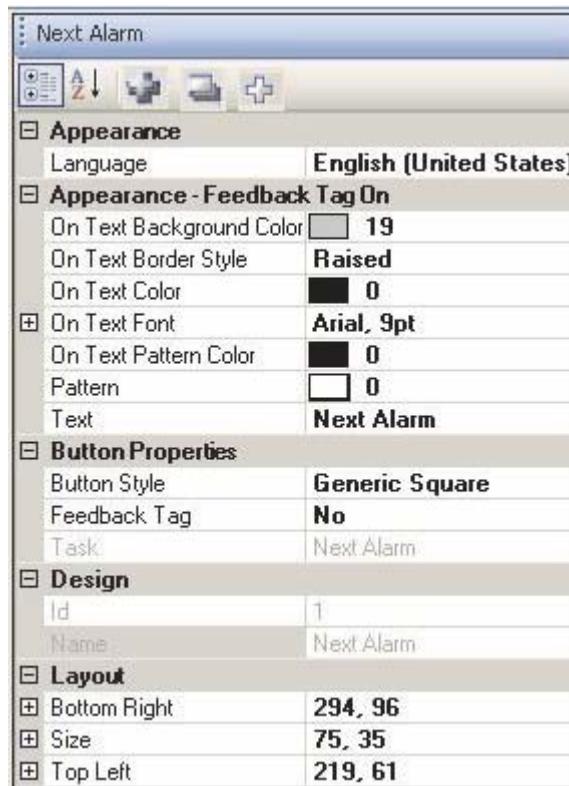
Name:- Display the name of the selected Button object as "Ack all Alarm".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**c) Next Alarm :-**

To switch to the next alarm from list of the alarms displayed in Alarm Display Window. This is a predefined action button with task for switching to next alarm , on one press of this button alarm highlighter is switched to next Alarm number.

**Appearance:-**

**Language:-** To set the desired language to the text of action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Next Alarm".

Name:- Display the name of the selected Button object as "Next Alarm".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**d) Previous Alarm :-**

To switch to the previous alarm from list of the alarms displayed in Alarm Display Window. This is a predefined action button with task for switching to previous alarm, on one press of this button alarm highlighter is switched to previous Alarm number.

**Appearance:-**

**Language:-** To set the desired language to the text of action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task:-** This section is greyed out. This cell will display the object name selected. For the selected object the text displayed in this cell is "Prev Alarm".

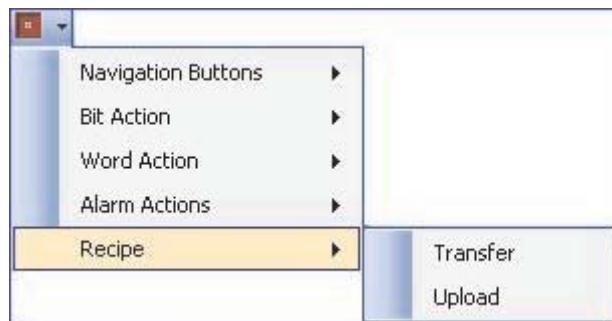
Name:- Display the name of the selected Button object as "Prev Alarm".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Recipe Actions:-**

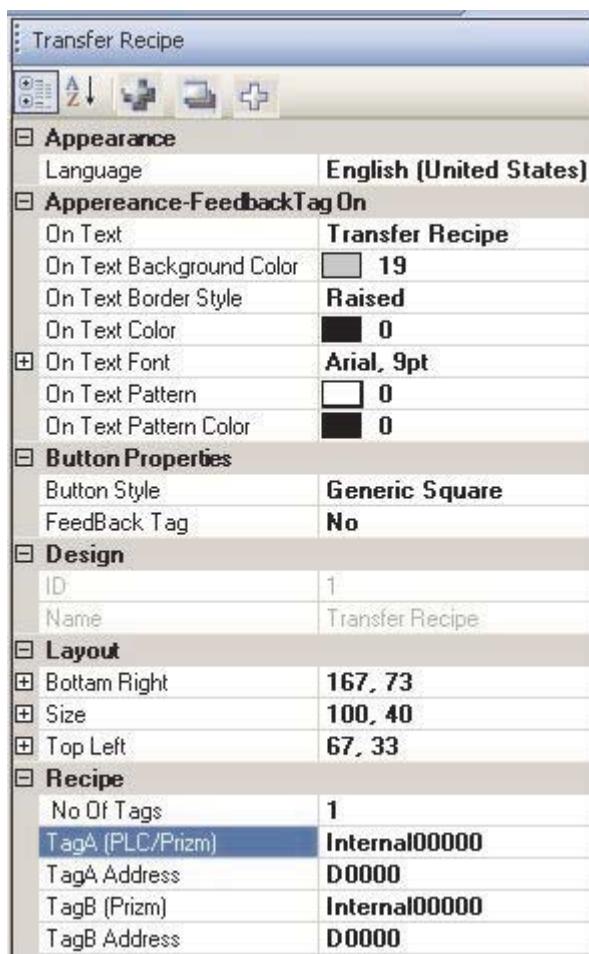
To perform some operation of block copy from list of PLC tags to list of internal Tags or List of internal tags to list of Internal/PLC tags. Here copy block command is performed from Tag B to Tag A. Accordingly the selection of Transfer Recipe or Upload Recipe command is to be selected. Maximum number of Blocks that can be copied through this button action are 999.



By default these action buttons are disabled. These Recipe action buttons are enabled only when any of the internal or PLC tag is defined in Tag Data base.

**a) Transfer (Recipe)**

This is the recipe command to transfer the blocks of tags from internal tags to Internal/PLC tags. This action is irreversible, that is through transfer recipe user cannot copy PLC tags to Internal or another PLC tags.

**Appearance:-**

Language:- To set the desired language to the text of action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Name:-** Display the name of the selected Button object as "Transfer Recipe".

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Recipe:-**

To transfer number of blocks of Internal tags to internal or PLC Tags. Here the copy is from Tag B to Tag A. Where Tag B Cell Flyout list out with only internal Tags and Tag A Cell flyout will list out internal as well as PLC Tags.

**No Of Tags:-** The number with expected number of blocks to be copied from internal to internal/PLC tags is to be defined in this cell. The maximum number that can be entered here is 999. By Default this cell has value "1".

**Tag A(PLC/HMI):-** Name of the internal or PLC Address is to be selected to which the value from Tag B is to be copied. The flyout to this cell will list out all the internal or PLC Tags name. Changing the tag name will display the corresponding Tag Address in following Tag A Address cell.

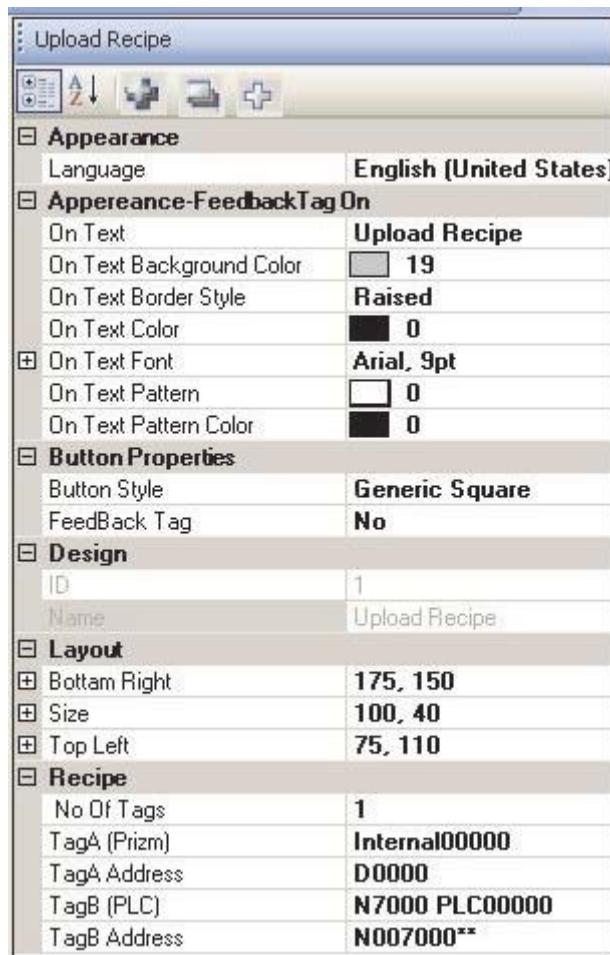
**Tag A Address:-** Tag address of internal or PLC is to be selected to which the value from Tag B is to be copied. The flyout to this cell will list out all the internal or PLC Tags. Changing the tag address from this cell will display the corresponding Tag Address name in above Tag A cell.

**Tag B(HMI):-** Name of the internal Address is to be selected whose value is to be copied in Tag A. The flyout to this cell will list out all the Tag names of internal register only. Changing the tag name will display the corresponding Tag address in following Tag B Address cell.

**Tag B Address:-** Tag address of internal register is to be selected whose value is to be copied to Tag A. The flyout to this cell will list out all the internal tags only. Changing the tag address from this cell will display the corresponding Tag Address name in above Tag B cell.

### b) Upload (Recipe)

This is the recipe command to upload the blocks of PLC tags to Internal tags. This action is irreversible, that is through upload recipe command user cannot copy internal tags to PLC tags or even PLC tags to another PLC tags.



#### **Appearance:-**

Language:- To set the desired language to the text of action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

#### **Appearance -Feedback tag On:-**

This is the common button object properties as defined in earlier section of 5.3.1.

#### **Button properties:-**

Button Style:- To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

Feedback Tag:- To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

Name:- Display the name of the selected Button object as "Upload Recipe".

#### **Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**Recipe** :- To transfer number of blocks of PLC Tags to internal Tags. Here the copy is from Tag B to Tag A.

Where Tag B Cell Flyout list out with only PLC Tags and Tag A Cell flyout will list out internal tags .

**No Of Tags**:- The number with expected blocks to be copied from PLC tags to internal tags is to be defined in this cell. The maximum number that can be entered here is 999. By Default this cell has value "1".

**Tag A(HMI)**:- Name of the internal address is to be selected to which the value from Tag B is to be copied. The flyout to this cell will list out all the internal Tags name. Changing the tag name will display the corresponding Tag Address in following Tag A Address cell.

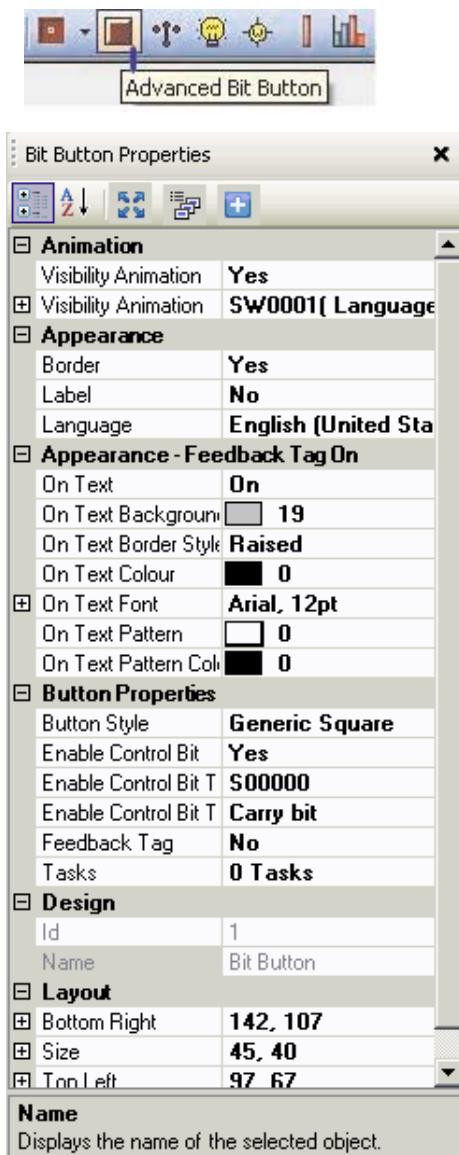
**Tag A Address** :- Tag address of internal register is to be selected to which the value from Tag B is to be copied. The flyout to this cell will list out all the internal Tags. Changing the tag address from this cell will display the corresponding Tag Address name in above Tag A cell.

**Tag B(PLC)**:- Name of the PLC address is to be selected whose value is to be copied in Tag A. The flyout to this cell will list out all the Tag names of PLC registers only. Changing the tag name will display the corresponding Tag address in following Tag B Address cell.

**Tag B Address**:- Tag address of internal register is to be selected whose value is to be copied to Tag A. The flyout to this cell will list out all the internal tags only. Changing the tag address from this cell will display the corresponding Tag Address name in above Tag B cell.

### 5.3.2 Advanced Bit Button

Advanced Bit button wizard is same as that of various buttons as we seen in previous section of Buttons. Only difference is this Advanced Bit Button wizard has list of various predefined task that can be performed through it. This wizard has three more options for performing task action on pressing it on unit screen, as Press task, Pressed task or Released task. Multiple task can be used in combination through single Advanced bit button object.



**Visibility Animation:-** User can show or hide the data entry object using this property. Refer section 11.8 for detailed operation

#### Appearance:-

Language:- To set the desired language to the text of action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

#### Appearance -Feedback tag On:-

This is the common button object properties as defined in earlier section of 5.3.1.

**Button properties:-**

**Button Style:-** To define the style of buttons to be embedded on unit screen. This is the common button object properties, for more details refer section 5.3.1.

**Enable control Bit:-** User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task is depends upon the bit value.

**Enable control Bit Tag address:** Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

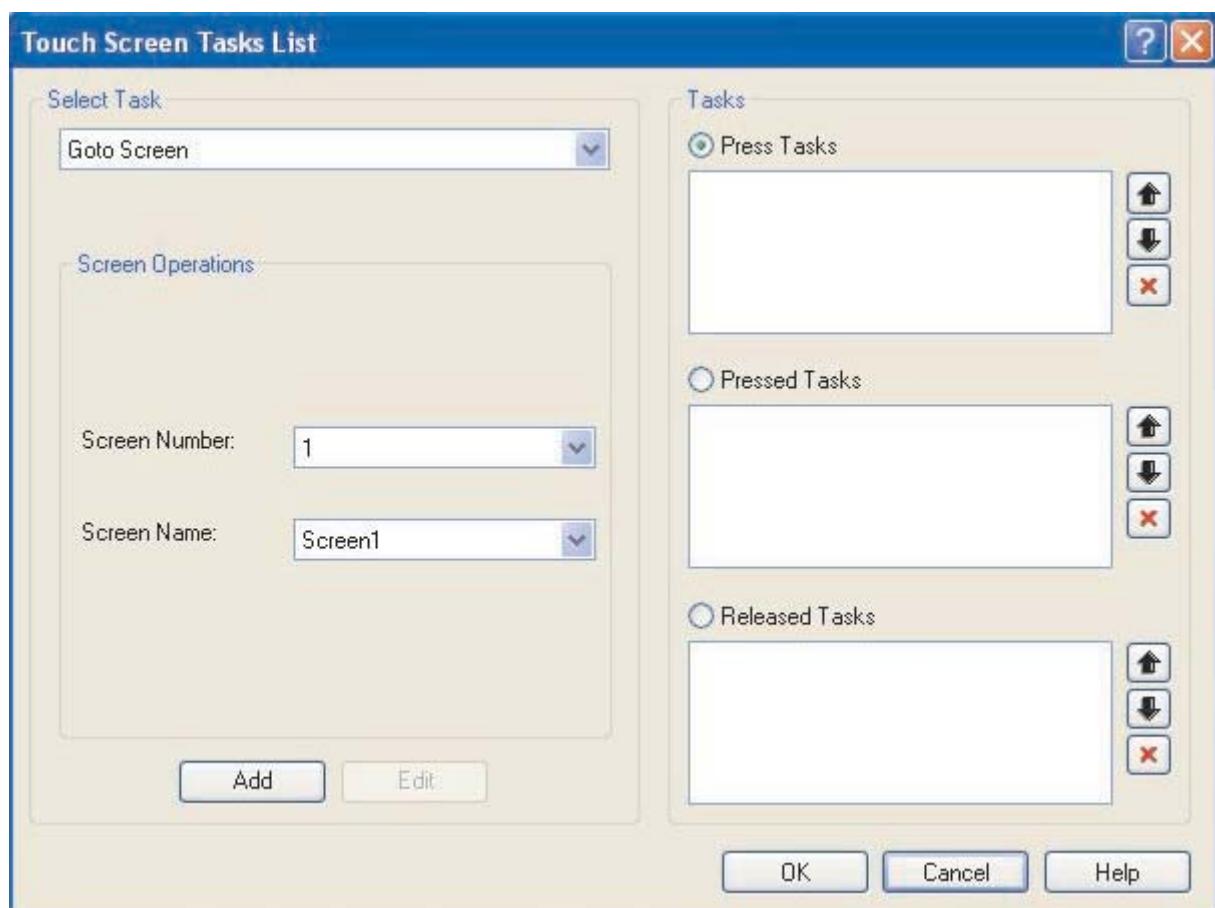
**Feedback Tag:-** To define the feedback tag to the button object, so that on this button object itself the status of the feedback tag defined can be seen. This is the common button object properties, for more details refer section 5.3.1.

**Task List:-** Various touch screen tasks can be performed through this advanced bit button wizard. This cell will display the total number of tasks that are being defined in the popup window of “Touch Screen Task List”. This task list cell has a button to popup the details of “Touch Screen Task List”. Designer can configure the desired actions to performed on the touch/press of the bit button. As shown in the following image, following are the properties section that has to be configured for any bit button action.

- 1) Select Task :-** To select the desired task by the Designer. Various tasks that can be performed. Further we will see in more details.

**2) Tag Operation:-** The operations to be performed on the tag or task

**3) Tasks:-** Designer needs to define at which instant on press of the button wizard the desired task action is to be performed. 3 tasks at which these can be performed are Press Task, Pressed Task and Released task.

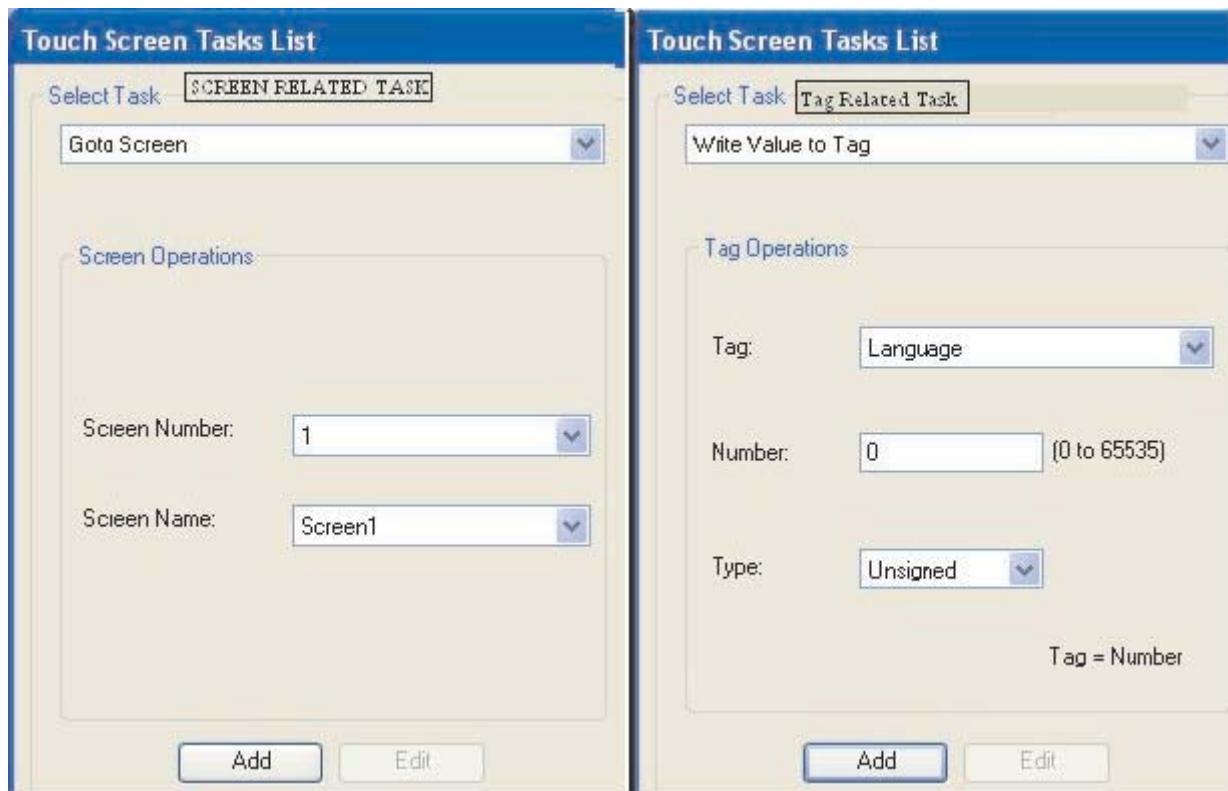


Select Task :- The Various tasks that designer can define for the bit button actions are as follows:

- a) Goto Screen:- To Switch to desired screen defined in tag Operation.
- b) Previous Screen:-To Switch to Previous Screen defined in Tag Operation.
- c) Next Screen:-To Switch to Next Screen defined in Tag Operation.
- d) Write value to Tag:- Write constant value to Defined tag in Tag Operation .
- e) Add a constant value to a Tag:- Add constant value to Defined tag in Tag Operation .
- f) Subtract a constant value from a Tag:- Subtract a constant value from a defined tag.
- g) Add Tag B to Tag A:- Add value of Tag B to value of Tag A defined in Tag operation.
- h) Subtract Tag B from Tag A:- Subtract a Value of Tag B from a value of Tag A.
- i) Turn Bit On :- To turn On the coil type tag defined in Tag Operation.
- j) Turn Bit Off:- To turn Off the coil type tag defined in Tag Operation
- k) Toggle Bit :- To toggle the status of Coil type tag defined in Tag Operation .
- l) Copy Tag B to Tag A:-Copy Value of Tag B to Tag .
- m) Swap Tag A and Tag B:-Swap (interchange) the Value of Tag A with Value of tag B.
- n) Print Data :- To print the data displayed on unit screen.
- o) Set RTC:- To set the RTC of the unit through Increment or Decrement task
- p) Copy Tag to STR:- Copy value of tag to Screen Trigger Register(STR) tag to switch to the desired screen.
- q) Copy HMI Block to HMI / PLC Block:- To Copy block of tags from Internal Register of HMI to Internal or PLC registers
- r) Copy HMI / PLC Block to HMI Block:-To Copy block of tags from Internal or PLC Register to Internal registers of HMI.
- s) Go to Popup Screen:-To Switch to desired Popup Screen through Tag Operation.
- t) Key Specific Tasks:- To perform some of the Key specific Tasks.

**Tag Operations:-**

Tag operations varies with the Selected Tasks from "Select Task" list. If the task selected is related to screen switch then tag operation window will have cell to fill information regarding the Screens and if task selected is regarding the tag operation then tag operation cell will display the cell wrt Tag Information, Tag type etc.



**Tasks:-** The Selected tasks for an advanced bit object can be performed at various instants of pressing the Button actions. Following are the instants at which we can perform the actions are:



- 1) Press Task:- List of operations defined under this section will get performed once at every press.
- 2) Pressed Task:- List of operations defined under this section will get performed until the key/button is kept pressed.
- 3) Released Task:- List of operations defined under this section will get performed at the instant of releasing the Press/Pressed key.

By Default the Radio button is marked for Press Task. As we shift the Radio Button from Press task to any of the other task, then only the supported tasks are enabled in Select Task list for respective Tasks (Press / Pressed / Released Tasks).

Even all Keyspecific tasks cannot be used in each and every Tasks Section. These task which can be performed in specific tasks Section are only enabled rest all the tasks are disabled.

Sequence for performing the action with the List of tasks selected in any of the task can be edited through use of Up or Down arrow button supported near the Task Screen.

**Layout:-**

To embed the button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

### 5.3.3 Word Button

To display Multiple States and perform respective multiple tasks action on different value ranges of a single numerical tag is possible through Word Button object wizard.

As per the value ranges of a numerical tag, display state can be varied and for each display state separate/combination of Task can also be performed through one object i.e. Word Button.

Required properties for setting Word button can be done through, property grid window from right side column of the Software



#### Appearance:-

Border:- Border for Word button object can be set through this cell. By default the object has No Border. To set border select the desired border from Flyout. The border can be Single line border or double line border.

Label:- Label to define the text message for Word button object. This label can be defined at the top or bottom side of the Word button object. This is an optional when selected 'Yes', the following cell with functionalities gets enabled.

Label Position:- To label the object either on Top side or Bottom side of the Object. By Default the position of the label is at Top.

Label Text :- Designer can define his/her own text to define the label for an object. Designer can use alphanumeric characters for the same. By Default the Text is Label.

Label Text Color :- Text of the Label can be changed to different colors. To Set the text color for the label of word button object. Designer can define the any available color as per the product display type reduced. By default the Text color of Label of button object is Black.

Label Text Font :- Properties related to font of text to be entered in Label for word button object is listed.

This Label Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text , which can be edited from the cells. Here designer can edit Font, Font Script, Style, Size, Effects from this cell information.

Label Background Color :- background color of the Label Text of Word button can be changed to different colors. To Set the background color for label of word button object. Designer can define the any available color as per the product display type selected. By default the background color of button object is White.

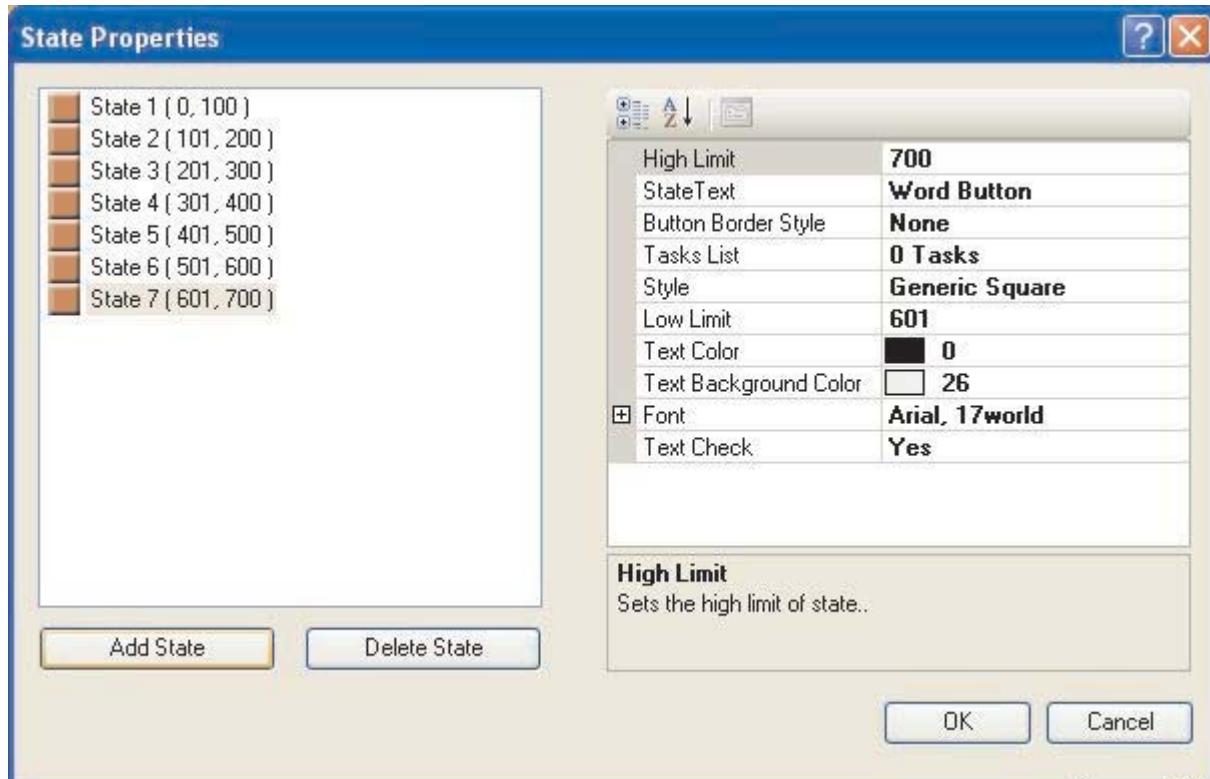
Language:- To set the desired language to the text of action button object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Layout:-**

To embed the word button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

**State Properties:-**

Description of States defined in word button are described in these cells.



**Current State:-** To Display the format defined in state properties window for each state. With selecting the particular State number respective display format will be displayed in the screen.

**Number of State:-** This cell display the total number of states defined in state Properties.

**State Properties:-** To define the properties of individual states, the button in this cell provided to popup the state properties window , with further details of State. Text written in this cell is [Collection] with button to collect the properties for setting the States to Word Button object.

Following are the details of this property window:

**State Text:-** To determine the name to State of the object button. The Text for this cell can be any alphanumeric or special characters. By default the text is Word Button.

**Button Border Style:-** To set the Border to the buttonobject to have a better look to the button object . various border style that can be set through Flyout of this cell are as follows:

- Raised
- Etched
- Bump
- Sunken
- Frame
- None
- Flat

Observe the object on screen and corresponding Border style is set through property grid window. By default the border style defined is "Raised" , designer can change it to any desired color from available color palets for the selected product display.

**Task List :-** To perform the Touch key operated task when respective Button state is displayed on unit screen. List of tasks that can be performed through an Touch key button is displayed in Touch Screen Task List Button. This will be same as that we do in Advanced Bit Button object. This cell will display the number of task defined for the respective state button.

**High Limit:-** The high limit value to be defined for the tag used for multiple state word button object for respective state. When the value for the same tag is within this High limit and more than the low limit defined in following cell, then only the respective State of the button is displayed on unit screen.

**Style:-** To display the various states of the word button objects in different shapes and style. This cell has some of the predefined shapes which can be defined for particular states of word button object . Even designer can define there user defined images or bitmaps to display the state of the word button object.

**Low Limit:-** The low limit value to be defined for the tag used for multiple state word button object for respective state. When the value for the same tag is same or above this and up to the high limit defined, then only the respective State of the button is displayed on unit screen.

**Text Color:-** Text of the state of button object can be changed to different colors. To Set the text color for the state of word button object, designer can define the any available color as per the product display type selected. By default the Text color of Label of button object is Black.

**Text Background Color:-** Background color for the state Text of Word button object can be changed to different colors. To Set the background color for the word button object, designer can define the any available color as per the product display type selected. By default the background color of button object is White.

**Font:-** Properties related to font of text to be entered in state properties in word button object is listed. This Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from the cells. Here designer can edit Font, Font Script, Style, Size, Effects from this cell information.

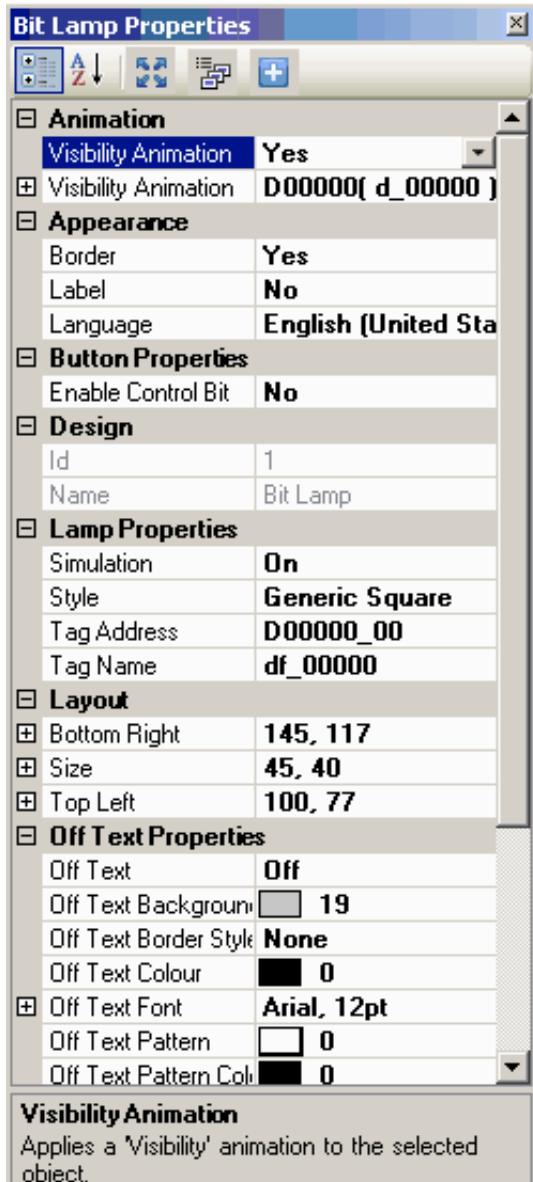
**Text Check :-** If any of the particular state of word button object is to be displayed without Text , it can be defined through this cell by defining this cell as 'No'. Defining 'No' will disable the State Text Cell, Text Color cell and Font cell.

**Tag Address:-** Type tag whose state has to be displayed in defined word button object can be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Name:-** Name of the numerical type tag to be used to display the state of word button object is to be set in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

### 5.3.4 Bit lamp

This object is used to display the On state and Off state of a coil type tag. This object can be defined in various user defined style. To set the display properties for bit lamp object can be set through property grid window.



#### Bit Lamp Properties:-

**Visibility Animation**:- User can show or hide the bit lamp object using this property. Refer section 11.8 for detailed operation.

#### **Appearance:-**

**Language**:- This section has to be defined for the language desired by the designer to display the text of the lamp state in respective language. This cell will display the list of languages defined in project configuration for particular project application. By default the language defined in this cell is English (United States).

**Name**:- Display the name of the selected Button object as "Bit Lamp".

#### **Button Properties:-**

**Enable control Bit**: User can control the task execution of the object at runtime. Once the user enables this feature then execution of the task depends upon the bit value.

**Enable control Bit Tag address**: Defined the tag address. This tag should be that one, which on enabling the task execution of the object at runtime can be controlled.

If the bit value tag becomes zero (0), the task will not be executed and if it is one (1), then the task will be executed.

*Note: This feature is not supported in FP4020/30 models.*

**Lamp Properties:-**

Simulation:- Through this cell preview of the defined On state and Off state can be seen/reconfirmed. This cell has two options On /Off. Setting it On will always show the defined On State on screen in software (i.e. for preview). Setting it OFF will display the defined off state on screen in software for preview.

Style:- To display the various states of the bit lamp objects in different shapes and style. This cell has some of the predefined shapes which can be defined for particular states of bit lamp object . Even designer can define there user defined images or bitmaps to display the state of the bit lamp object.

Tag Address:-Type tag whose state has to be displayed in defined bit lamp object can be defined in this cell. Flyout from this cell will display the list of defined internal and PLC bit type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

Tag Name:- Name of the bit type tag state is to be displayed in bit lamp object is to be set in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Off Text Properties:-**

This property grid is to be used to configure the display properties for Off condition state of the defined tag.

Off text Background color:- To Set the background color for the bit lamp object. Designer can define the any available color as per the product display type selected. By default the background color of button object is Grey.

Off Text Border Style:- To set the Border to the bit lamp object to have a better look to the button object . various border style that can be set through Flyout of this cell are as Follows:

- a. Raised      b. Etched      c. Bump
- d. Sunken      e. Frame      f. None      g. Flat

Observe the object on screen and corresponding Border style is set through property grid window. By default the border style defined is "Etched" , designer can change it to any desired color from available color palets for the selected product display.

Off Text Color:-Off text color on the bit lamp object can be changed through this cell.The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is Black.

Off Text Font:- Properties related to font of text is listed. This Off text font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from following cell.

Name:- To define the font name to be assigned for Text of the Button object. Flyout to this cell will list out the available font type in your system OS. Default is 'Arial'.

Size:- To define the font size to be assigned to the text of the button object. Here the designer needs to enter the number to define the desired font size. Default font size in this cell is '9'.

Bold:- To define the Font of the text in button object in Normal form or in Bold Form. This cell is optional, by default this cell has 'False' information , i.e. font selected is with 'Normal' type. If this cell information is defined to be 'True' then font form selected will be '**Bold**'.

Italic:- To define the font of text in button object in Normal or in Italic form. By default this cell has 'False' information i.e text in this object is in 'Normal' form, if this cell information is changed to 'True' then Text in object is in '*Italic*' form.

Strikeout:- The text in the button object can be striked out. By default this cell has information as 'False' i.e the text is in 'Normal' form. If the cell information is changed to 'True' the text displayed is with 'Strikeout' form.

Underline:- The text in the button object can be underlined. By default this cell has information as 'False' i.e the text is in 'Normal' form. If the cell information is changed to 'True' the text displayed is with "Underline" form.

Off Text Pattern:- The various patterns to the buttons that can be assigned are shown in pattern dialog box. By default the button pattern is White.

On Text Pattern color:- On text pattern color can be changed through this cell.The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is Black.

Text:- Text on the button object can be changed. Any alphanumeric characters can be written on the button object.

**On Text Properties:-** This property grid is to be used to configure the display properties for Off condition state of the defined tag.

**On text Background color:-** To Set the background color for the bit lamp object. Designer can define any available color as per the product display type selected. By default the background color of button object is Grey.

**On Text Border Style:-** To set the Border to the bit lamp object to have a better look to the button object.

Various border style that can be set through Flyout of this cell are as Follows:

- a. Raised
- b. Etched
- c. Bump
- d. Sunken
- e. Frame
- f. None
- g. Flat



Observe the object on screen and corresponding Border style is set through property grid window. By default the border style defined is "Etched" , designer can change it to any desired color from available color palets for the selected product display.

**On Text Color:-** On text color on the bit lamp object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is Black.

**On Text Font:-** Properties related to font of text is listed. This On text font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from following cell.

**Name:-** To define the font name to be assigned for Text of the Button object. Flyout to this cell will list out the available font type in your system OS. Default is 'Arial'.

**Size:-** To define the font size to be assigned to the text of the button object. Here the designer needs to enter the number to define the desired font size. Default font size in this cell is '9'.

**Bold:-** To define the Font of the text in button object in normal form or in Bold Form. This cell is optional, by default this cell has 'False' information , i.e. font selected is with 'Normal' type. If this cell information is defined to be 'True' then font form selected will be '**Bold**'.

**Underline:-** The text in the button object can be underlined. By default this cell has information as 'False' i.e the text is in 'Normal' form. If the cell information is changed to 'True' the text displayed is with "Underline" form.

**Italic:-** To define the font of text in button object in normal or in Italic form. By default this cell has 'False' information i.e text in this object is in 'Normal' form, if this cell information is changed to 'True' then Text in object is in '*Italic*' form.

**Strikeout:-** The text in the button object can be striked out. By default this cell has information as 'False' i.e the text is in 'Normal' form. If the cell information is changed to 'True' the text displayed is with 'Strikeout' form.

**On Text Pattern:-** The various patterns to the buttons that can be assigned are shown in pattern dialog box. by Default the button pattern is White.

**On Text Pattern color:-** On text pattern color can be changed through this cell. The flyout will display color dialog box, with supported colors for the product If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for any product is Black.

**Text:-** Text on the button object can be changed. Any alphanumeric characters can be written on the button object.

### 5.3.5 Word Lamp:-

To display Multiple States of the different value ranges of a single numerical tag is possible through Word lamp object wizard.

As per the value ranges of a numerical tag , display state can be varied. This wizard is same as that of Word button with difference of only display and not able to perform any task with touch button on this object.

Required properties for setting Word lamp object can be done through, property grid window from right side column of the Software.

#### Word Lamp Properties:



#### Appearance:-

Border:- Border for Word lamp object can be set through this cell. By default the object has No Border. To set border select the 'Yes' from Flyout.

Label:- Label to define the text message for Word lamp object. This label can be defined at the top or bottom side of the Word lamp object. This is an optional when selected 'Yes', the following cell with functionalities gets enabled :

Label Position:- To label the object either on Top side or Bottom side of the Object. By default the position of the label is at Top.

Label Text :- Designer can define his/her own text to define the label for an object. Designer can use alphanumeric characters for the same. By Default the Text is 'Label'.

Label Text Color :- Text of the Label can be changed to different colors. To Set the text color for the label of word lamp object. Designer can define the any available color as per the product display type selected. By default the Text color of Label of button object is Black.

Label Text Font :- Properties related to font of text to be entered in Label for word lamp object is listed. This Label Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text , which can be edited from the cells. Here designer can edit Font ,Font Script ,Style, Size, Effects from this cell information.

Label Background Color :- Background color of the Label Text of Word lamp can be changed to different colors. To Set the background color for label of word lamp object designer can define the any available color as per the product display type selected. By default the background color of button object is White.

Language:- This cell will display the list of languages defined in project configuration for particular project application. By default the language defined in this cell is English(United States).To set the desired language to the text of word lamp object from the list of languages defined in Language settings of application project.

Name:- Display the name of the selected object as "WordLamp".

#### Layout:-

To embed the word button object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the button object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details refer Layout section.

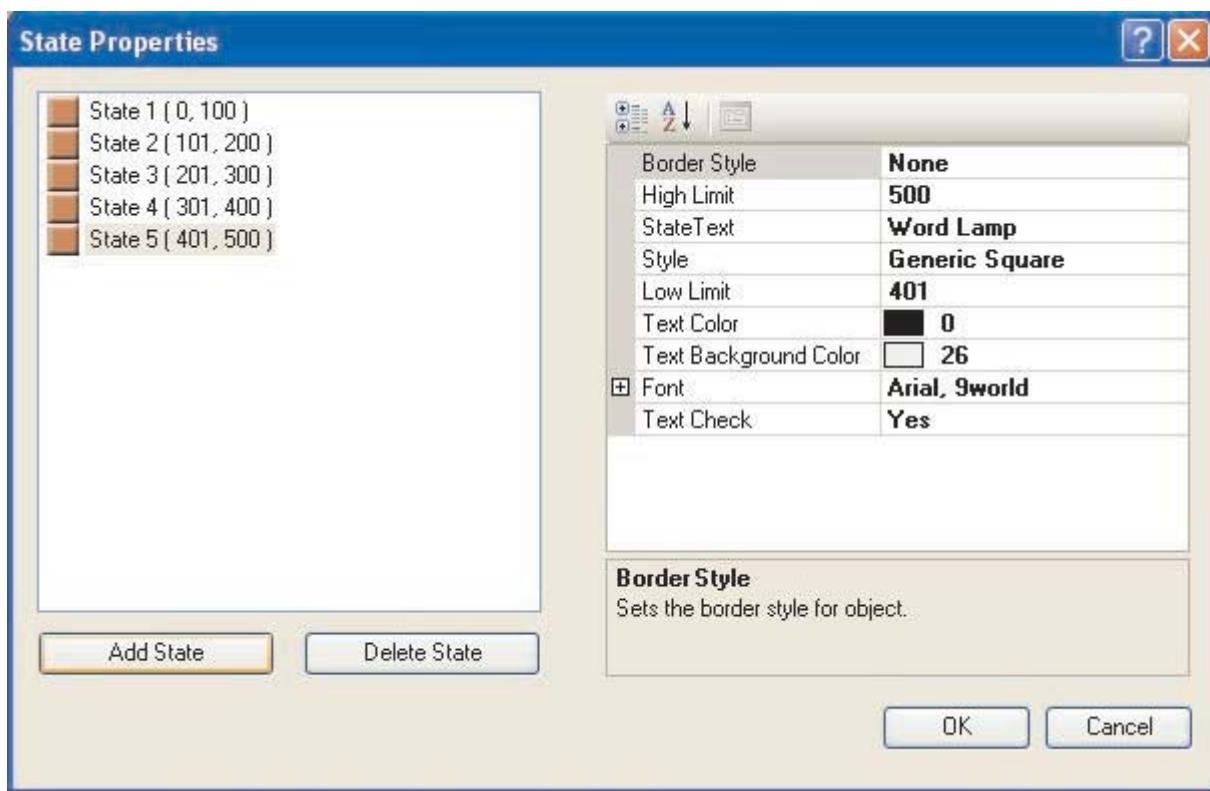
#### **State Properties:-**

Description of States defined in word lamp objects are described in these cells.

Current State:- To Display the format defined in state properties window for each state. With selecting the particular State number respective display format will be displayed in the screen.

Number of State:- This cell display the total number of states defined in state Properties.

State Properties:- To define the properties of individual states, the button in this cell provided to popup the state properties window, with further details of State. Text written in this cell is [Collection] with button to collect the properties for setting the States to Word lamp object. Following are the details of this property window:



Border Style:- To set the Border to the word lamp object to have a better look to the lamp object .

various border style that can be set through Flyout of this cell are as Follows:

- Raised
- Etched
- Bump
- Sunken
- Frame
- None
- Flat

Observe the object on screen and corresponding Border style is set through property grid window.By default the border style defined is "Raised", designer can change it to any desired color from available color palets for the selected product display.

State Text:- To determine the name to State of the object lamp. The Text for this cell can be any alphanumeric or special characters. By default the text is 'Word Lamp'.

**High Limit:-** The high limit value to be defined for the tag used for multiple state word lamp object for respective state. When the value for the same tag is within this High limit and more than the low limit defined in following cell, then only the respective State of the word lamp is displayed on unit screen.

**Style:-** To display the various states of the word lamp objects in different shapes and style. This cell has some of the predefined shapes which can be defined for particular states of word button object . Even designer can define there user defined images or bitmaps to display the state of the word lamp object.

**Low Limit:-** The low limit value to be defined for the tag used for multiple state word lamp object for respective state. When the value for the same tag is same or above this and upto the high limit defined, then only the respective State of the lamp is displayed on unit screen.

**Text Color:-** Text of the state of lamp object can be changed to different colors. To Set the text color for the state of word lamp object,designer can define the any available color as per the product display type selected. By default the Text color of word lamp object is Black.

**Text Background Color:-** Background color for the state Text of Word lamp object can be changed to different colors. To Set the background color for the word lamp object,designer can define the any available color as per the product display type selected. By default the background color of button object is White.

**Font:-** Properties related to font of text to be entered in state properties in word lamp object is listed. This Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text , which can be edited from the cells. Here designer can edit Font, Font Script, Style, Size, Effects from this cell information.

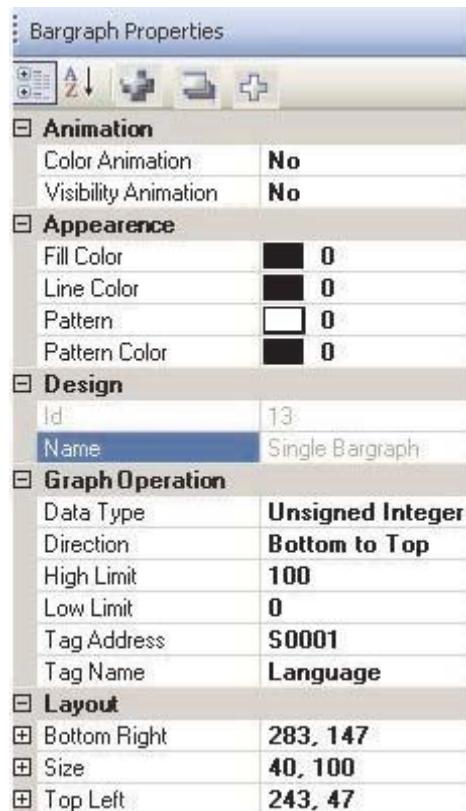
**Text Check :-** If any of the particular state of word lamp object is to be displayed without Text, it can be defined through this cell by defining this cell as 'No'. Defining 'No' will disable the State Text Cell, Text Color cell and Font cell.

**Tag Address:-** Type tag whose state has to be displayed in defined word lamp object can be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Name:-** Name of the numerical type tag to be used to display the state of word lamp object is to be set in this cell. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell

### 5.3.6 Bargraph

To display the graphical representation of value of any numerical tag can be done through Bargraph object. Bargraph object of desired length and width can be drawn with the help of Mouse pointer. In software screen, display parameters required to draw bargraph can be set in Property window .



**Animation:-** Bargraph object can be animated in various forms such as Changing the line and background Color of bargraph object, Show/hide the bargraph object depending on the value of internal or PLC tag. Refer to the Animation section for more details.

#### Appearance:-

Fill Color :- Fill color of the bargraph object can be changed through this cell.The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for rectangle object is Black(0).

Line Color:- To set the color to the border Line of bargraph object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default color of line of bargraph object for any product is defined as Black(0).

Pattern:- Different fill pattern of the bargraph object can be set through this cell. The available patterns from flyout are selected from this cell. Some of the available patterns are as follows. By default the fill pattern defined is white.



**Pattern color:-** To set the color to the patterns selected in above cell for bargraph object. Colors for these objects varies from product to product. Range of color depends upon the type of display used for selected product. Products with Monochrome display can have 16 Grey Scale colors and Color display can have 256 colors varying in combination of RGB colors. Default color of line of rectangle object for any product is selected as Black(0).

**Layout:-** To embed the bargraph object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

#### **Graph Operation:-**

To set the parameters required for the bargraph object. Different parameters are such as to define direction in which bar is to be moved , Low limit and high limit value upto which bar is to be moved, defining the Tag on whose value the bar is going to be moved.

<b>Graph Operation</b>	
Data Type	<b>Unsigned Integer</b>
Direction	<b>Bottom to Top</b>
High Limit	<b>100</b>
Low Limit	<b>0</b>
Tag Address	<b>S0001</b>
Tag Name	<b>Language</b>

**Data type:-** The data type of tag which is to be configured for the bargraph object is to be defined in this cell. The data types which can be supported to the Bargraph object are Unsigned Integer, Signed integer, Hexadecimal, BCD, Float same are also listed in Flyout to the cell.

**Direction:-** Direction to move the bargraph as per the change in value of assigned tag to bargraph object can be set through this cell. This direction can be either Left to Right , Right to Left, Bottom to Top or Top to Bottom.

**High Limit:-** High limit value for the defined tag is to be set , that will be the limit for the Bargraph object to move the bar upto it.

**Low Limit:-** low limit value is to be set to limit the bar moving in lower direction upto it.

**Tag Address:-** Numerical Type tag whose value is to be represented in bargraph object is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Name:-** Name of the numerical type tag to be used to display the value of it in graphical form in Bargraph object is to be set here. Flyout from this cell will display the list of Tag names already defined in Tag Data base for Internal or PLC Tags. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

### 5.3.7 Multiple Bargraph

Multiple bargraph object can be used to display the graphical representation of 4 different Tag values. With the help of this object user can compare 4 tag values. Multiple bargraph object of desired length and width can be drawn with the help of Mouse pointer. In software screen, display parameters required to draw bargraph can be set in Property window .

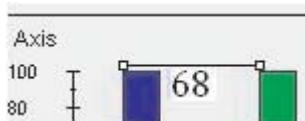
**Animation:-** Multiple bargraph object can be animated only for Show or Hide. Refer to the Animation section for more details.

<input checked="" type="checkbox"/> Appearance	
Bar Spacing	15
Bar Width	10
Bargraph Backgrou	<input type="color"/> 26
Border	Yes
Data Type	Unsigned Integer
Label	No
Language	English (United Sta
Style	Bottom to Top

Appearance:-

Bargap:- The desired distance between the two bars drawn in Multiple bargraph object is to be set through this cell. The bargaph is represented with respect to the number of pixels space between two bars. The total distance between one bar and gap between two consecutive bars is of 68 number of Pixels. Hence maximum allowable bargap number depends upon the assigned barwidth. By default this space is 18.

BarWidth:- The width of the bar is defined through this cell. Width is represented in number of pixels space. The total distance between one bar and gap between two consecutive bars is of 68 number of Pixels.



Hence maximum allowable barwidth depends upon the assigned bargap in above cell. By default barwidth is 15.

Bargraph Background Color :- Background color of the multiple bargraph object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for multibargraph object is White.

Border:- To set the border to the multibargraph object is selected through this cell. If designer selects 'No' then Border is not drawn for the multibargraph object. By default it is selected a Yes to draw the Border to the object.

Label:- This cell is to define if designer needs to specify some heading to the multibargraph object. Text heading with different color,background , font size can be defined to multibargraph object at its Top or Bottom position. If selected as 'Yes' further following cells related to label properties are enabled. By default Label for object is not assigned. This cell has 'No' information.

Label Background Color :- Background color of the Label Text for multibargraph object can be changed to different colors. To Set the background color for label of this object,designer can define the any available color as per the product display type selected. By default the background color of button object is White.

Label Font :- Properties related to font of text to be entered in Label for multibargraph object is listed. This Label Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from the cells. Here designer can edit Font ,Font Script, Style, Size, Effects from this cell information.

Label Position:- To label the object either on Top side or Bottom side of the Object. By Default the position of the label is at Top.

Label Text :- Designer can define his/her own text to define the label for an object. Designer can use alphanumeric characters for the same. By Default the Text is 'Label'.

Label Text Color :- Text of the Label can be changed to different colors. To Set the text color for the label of multigraph object. Designer can define the any available color as per the product display type selected. By default the Text color of Label of button object is Black.

Language:- To set the desired language to the text of multibargraph object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

Style:- The bar graphs can be moved in 4 different styles, from top to bottom, bottom to top, Left to Right, Right to Left.

#### Axis Attributes:

<b>Axis Attributes</b>	
Axis	Yes
Axis Color	 0
Display Division Properties	5,2
Display Divisions	Yes
Display Range	Yes
Display Range - Maximum	100
Display Range - Minimum	0
Label	Yes
Label Background Color	 26
Label Text	Axis
Label Text color	 0

Axis:- It is needed to display the measuring correspondence for the values of tag represented in graphical format. Used to display the coordinate positional axis in X and Y direction for multigraph objects. This is optional for designer, if designer selects 'Yes' then following properties are enabled and Axis is displayed. By default Axis is Enabled.

Axis Color:- To change the axis color. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the axis color for multibargraph object is 'Black'. The change in axis color will change the X -Y Axis lines and Y coordinates value ranges color.

Display Division properties:- Division of Y axis can be made with some Major and minor divisions. First digit displays the major divisions defined and second digit minor ones. Major division is the number of equal parts made in between Low limit value and High limit Value. Minor divisions are the equal part division in between 2 major divisions. By default this division is 5,2. This cell is enabled only if following Display division cell is enabled with 'Yes'.

Display Division:- To display the divisions to vertical Y axis. By default it is enabled with 'yes' hence divisions can be observed in multibargraph object. If this cell is defined with 'No' , then vertical scale will not be displayed.

Display Range:- Optional to decide whether to display the numerical value ranges on Y axis. By default the display range is enabled.

Display Range-Maximum:-Maximum range for Y axis value is to be displayed. Value in this cell represents the maximum value upto which bar is to be moved. By default this value is '100'.

Display Range-Minimum:-Minimum range for Y axis value is to be displayed. Value in this cell represents the minimum value upto which bar is to be moved. By default this value is '0'.

Label:- Label to Y axis is assigned through this cell. If this label cell is disabled with 'No' then following cells with its properties of Text color, Text Font, Background color will be disabled. By default Label is Enabled for Multibargraph object with all following property cells enabled.

Label Background Color:- Background color of the Label Text for Y axis in multibargraph object can be changed to different colors. To Set the background color for label for Y axis used in object, designer can define the any available color as per the product display type selected. By default the background color for label for Y axis in multibargraph object is White.

Label Text:- Text to be assigned to label to represent Y axis. User can write any alphanumeric and special characters to write Label. By Default it is 'Axis'.

Label Text Color:- Text of the Label can be changed to different colors. To Set the text color for the label of multigraph object, designer can define the any available color as per the selected product type display. By default Label Text Color is 'Black'.

**Bar Attributes:-**

To set the tag to different bar with different colors, different name, different labels, different Minimum-Maximum value ranges for each bar can be set through this section. User can select maximum of 4 bars.

Appearance	
Border	Yes
Colour Patch Proper	( Collection )
Colour Patches	5
Colour Range	Yes
Label	No
Language	English (United Sta
Simulation Value	35

Number of Bars:- Designer can select the number of desired bars to be compared through one multibargraph object. By default the name assigned to all bars is Bar1, Bar2, Bar3, Bar4. By default selected number of bars are 4.

Bar Selected:- The desired bar whose attributes needed to be defined can be selected from this cell.

Selecting the desired bar, will display the corresponding properties in following cell. By default selected bar is 'Bar1'.

Bar Value:- The bar position at which it is to be displayed by default is to be defined in this cell. By default the value in this cell is '100'.

Data Type:- The data type of tags to be used to display its graphical representation in Multibargraph object is defined in this cell. This data type selected for one bar is setted common for all other defined bars from one multibargraph object. The flyout to this cell will list out the data type supported by the object. By default the data type is unsigned integer.

Fill Line Color:- Border line of each bar can be changed through this cell. The assigned color in this cell will represent to the respective bar defined in 'Bar Selected' cell. The available colors from software depends upon the product display type selected. By default the assigned color in this cell is 'Black'.

Fill Color:- Fill color for each bar can be assigned through this cell. The assigned color in this cell will represent the respective bar defined in 'Bar Selected' cell. The available colors from software depends upon the product display type selected. By default the assigned color in this cell changes with the bar selected from 'Bar Selected' cell. Default colors assigned for Bar1 is Blue, For Bar2 is Green, for Bar 3 is Red and for Bar 4 is Yellow.

Label:- Name to the bar can be assigned in this cell. This is the label assigned to bar names to be displayed in X axis. The assigned color in this cell will represent to the respective bar defined in 'Bar Selected' cell. The available colors from software depends upon the product display type selected. By default the assigned color in this cell is 'Black'. The name in this cell will represent to the bar which is selected in 'Bar Selected' Cell. Designer can enter any alphanumeric or special characters. By default name to the multiple bars is Bar1 for first bar, Bar2 for second bar , Bar3 to third bar , Bar4 to fourth bar.

Label Background:- Background color for label displayed on X axis of the multiple bargraph object can be set from this cell. The available colors from software depends upon the product display type selected. By default the background color is 'White'.

Label Text:- Designer can rename the name of the bars from the default ones assigned through software.

User can use any alphanumeric characters and special character to rename the name of bar.

Text changed to rename the bar in this cell will represent to the bar selected in 'Bar Selected' cell.

By default this cell has folowing text as Bar1, Bar2, Bar3 and Bar4 representing corresponding first, second, third and fouth bar from multiple bargraph object.

Label Text Color:- Text color for the text used for individual Bar in X Axis can be define in this cell. The assigned color in this cell will represent to the respective bar defined in 'Bar Selected' cell. By default the label text color is 'Black'

Maximum Tag Value:- The maximum value upto which repetitive bar is to be moved can be defined in this cell. By default it is 100.

Minimum Tag Value:- The minimum value upto which repetitive bar is to be moved can be defined in this cell. By default it is 0.

**Tag Address:-** Numerical Type tag to be assigned to individual bar from multiple bargraph object is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. Selected tag from flyout will represent to the Bar defined in "Bar Selected" Cell. Selecting particular tag will display the respective tag name in following Tag name cell.

**Tag Address:-** Name of Numerical Type tag to be assigned to individual bar from multiple bargraph object is to be defined in this cell. Flyout from this cell will display the list of names of defined internal and PLC numerical type tags from tag data base. Selected name of tag from flyout will represent to the Bar defined in "Bar Selected" Cell. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Layout:-** To embed the multiple bargraph object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section

### 5.3.8 Analog Meter

This wizard provides view for any tag, which is analogous in nature. This wizard can be very useful to represent parameters values like Temperature, Pressure etc, which are stored either in a unit tag or PLC tag. Analog meter object of desired length and width can be drawn with the help of Mouse pointer. In software screen, display parameters required to use analog meter object can be set in Property window.

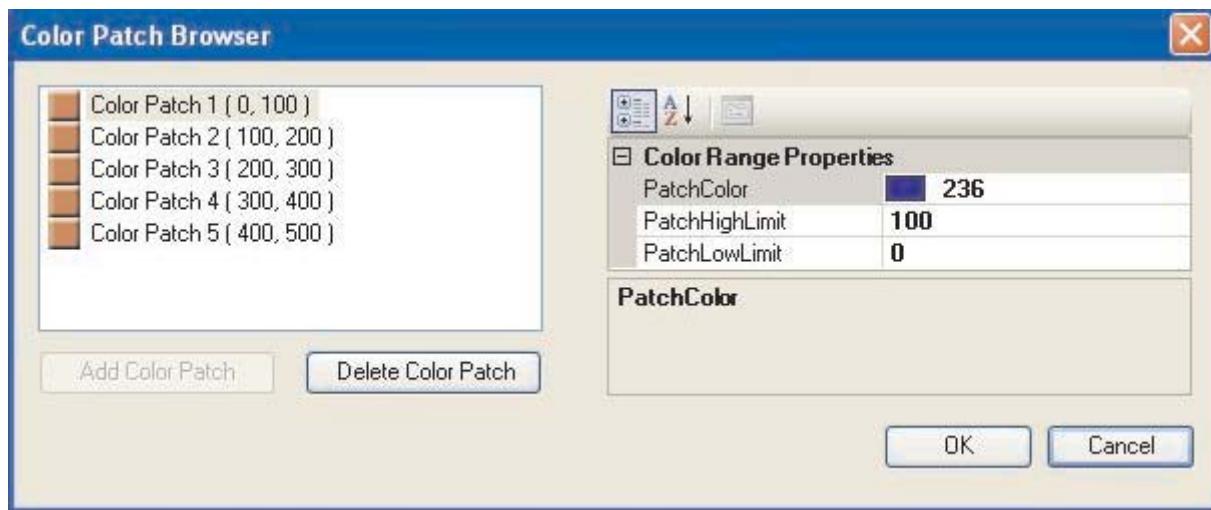


**Animation:-** Analog meter object can be animated only for Show or Hide. By default it is disabled "NO". Refer to the Animation section for more details.

#### Appearance:-

**Border:-** To set the border to the analog meter object is selected through this cell. If designer selects 'No' then Border is not drawn for the analog meter object. By default it is selected as 'Yes' to draw the Border to the object.

**Color Patch Properties:-** Analog meter dial can be set in color patched to elaborate the view of Tag Value can be set through this cell. By default Text in this cell is [collection], the button provided in this cell will popup with color patch browser window. Maximum of 5 color patches can be defined to the analog meter object. By default object shows 5 color patches as shown in figure.



**Color Patch Browser:** Designer can change and define the number of color patches desired to display, with desired color and value ranges through this popup window. By default the analog meter object is defined in 5 patches. Designer can define it in 1/2/3/4 patches also.

**Color Range Properties:-** Select the color patch which needed to be assigned with Low and High Limit and separate patch color.

**Patch Color:-** Individual patch can be assigned with separate color from the flyout to the cell.

The color will get assigned to the range with Low and High limit values. By default the patch color varies serially from Patch 1 to 5 in Blue, Yellow, White, Green and red Color respectively.

Patch High Limit:- The high limit for which the particular selected patch is to be colored is to be defined here.

By Default the high limit for patch 1 to 5 is 100, 200, 300, 400 and 500 respectively.

Patch Low Limit:- The low limit for which the particular selected patch is to be colored is to be defined here.

By Default the low limit for patch 1 to 5 is 0, 100, 200, 300 and 400 respectively.

Color patches:- This cell is greyed out, but displays the total number of patches being defined for analog meter object.

Color Range:- This cell is optional to display Analog meter object with either Color patch display enabled or disabled. If color range cell is having 'Yes' then color patches will be made available else with 'No' then analog meter object will display white dial. By default color range cell is enabled with 'Yes'.

Label:- This cell is to define if designer needs to specify some heading to the analog meter object. Text heading with different color, background, font size can be defined to the object at its Top or Bottom position. If this cell is selected as 'Yes' further following cells related to label properties are enabled. By default Label for object is not assigned. This cell has 'No' information.

Label Background Color :- Background color of the Label Text for analog meter object can be changed to different colors. To Set the background color for label of this object, designer can define the any available color as per the product display type selected. By default the background color of button object is White.

Label Position:- To label the object either on Top side or Bottom side of the Object. By Default the position of the label is at Top.

Label Text :- Designer can define his/her own text to define the label for an object. Designer can use alphanumeric characters for the same. By Default the Text is 'Label'.

Label Text Color :- Text of the Label can be changed to differnet colors. To Set the text color for the label of analog meter object, designer can define the any available color as per the product display type selected. By default the Text color of Label of button object is Black.

Label Text Font:-Properties related to font of text to be entered in Label for analog meter object is listed. This Label Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from the cells. Here designer can edit Font ,Font Script, Style, Size, Effects from this cell information.

Language:- To set the desired language to the text of multibargraph object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

Needle Simulation Value:- The simulation value at which needle of analog meter object is to be displayed is to be defined in this cell.

<b>Appearance Meter Background</b>	
Meter Background	Yes
Meter Background Color	<input type="color"/> 26
Meter Fill Color	<input type="color"/> 26
Meter Style	Custom Meter
Needle Color	<input type="color"/> 0

#### **Appearance Meter Background:-**

The details of meter background appearance parameters such as meter dial display option,change in Background color, Fill color Meter style and needle color are to be set through this section.

Meter Background:- This cell information is optional. Designer needs to define whether dial for Analog meter object is to be displayed. By default it is enabled. If enabled then only following background and fill color cells are enabled. But if it disabled then Analog meter object will show only border and Needle for meter object.

Meter Background Color:- Background color for the analog meter object can be defined in this cell. This is the color at the background of Dial of Analog meter object.By default this color is 'White'.

Meter Fill Color:- To fill the analog meter object with color is to be done through this cell. This is the color which is filled inside the dial. By default the fill color is white.

MeterStyle:- Option in which designer can choose the style in which the Analog meter object is to be displayed. Two styles in which analog meter can be displayed are Custom Meter or D-Meter with difference of angle. Custom meter can be drawn with any angle within 0-360 degree. D style meter is drawn in D Shape facing up with Start angle as 0 and End angle as 180. Dial Scale border is not drawn in D Style analog meter object.

Needle Color:- Color of the needle can be set through this cell. Color of the needle depends upon the product with selected display type. If display type of the product selected is Monochrome then available color varies in 16 grey scale, and if display type of product is color then color of the needle can be varied in 256 color. By default needle color is Black.

<b>Appearance Meter Foreground</b>	
Display Range	Yes
Divisions	4.2
Maximum Display Range	500
Minimum Display Range	0

#### **Appearance Meter Foreground:-**

Foreground appearance of analog meter object such as display range, major and minor divisions,min and max display range are to be set through this section.

Display Range:- This is optional if designer needs to display the scale for displaying ranges, then this cell has to be Enabled. By default it is enabled "Yes". Disabling this cell will also disable the following min max display range scale.

Divisions:- Dial of the analog meter object can be divided in to the scales with Maximum divisions and minor divisions within two Max divisions.

Maximum Display Range:- The maximum range upto which the needle of an analog meter is to be moved is to be defined in this cell. By default this range value is '500'.

Minimum Display Range:-The minimum range upto which the needle of an analog meter is to be moved is to be defined in this cell. By default this range value is '0'.

**Layout**:- To embed the analog meter object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

<b>Operation</b>	
Angle -End	180
Angle -Start	0
Meter Data Type	<b>Unsigned Integer</b>
Tag Address	S0001
Tag Name	Language
Value -End tag	500 , ---

#### **Operation:-**

Details of data type tag to be used for moving the value across analog meter object, Tag to be assigned for Analog meter, its start and end value and angle in which meter is to be moved is to be defined in this section.

Angle-End:- End Angle of the analog meter object is to be defined here. By default it is '180'. Designer can move it from 0-360 degrees. Only the difference between Start and End angle should be more than 10.

Angle-Start:- Start Angle of the analog meter object is to be defined here. By default it is '0'. Designer can move it from 0-360 degrees. Only the difference between Start and End angle should be more than 10.

Meter Data Type:- Data type of the tag which can be used for Analog Meter object are listed in this cell. Designer can select the data type to be used from flyout of this cell. By default data type selected is Unsigned Integer.

Tag Address:- Numerical Type tag to be assigned to analog meter object is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. The value of this tag will be moved in analog meter within the angle and within its defined start and end tag value. Selecting particular tag will display the respective tag name in following Tag name cell.

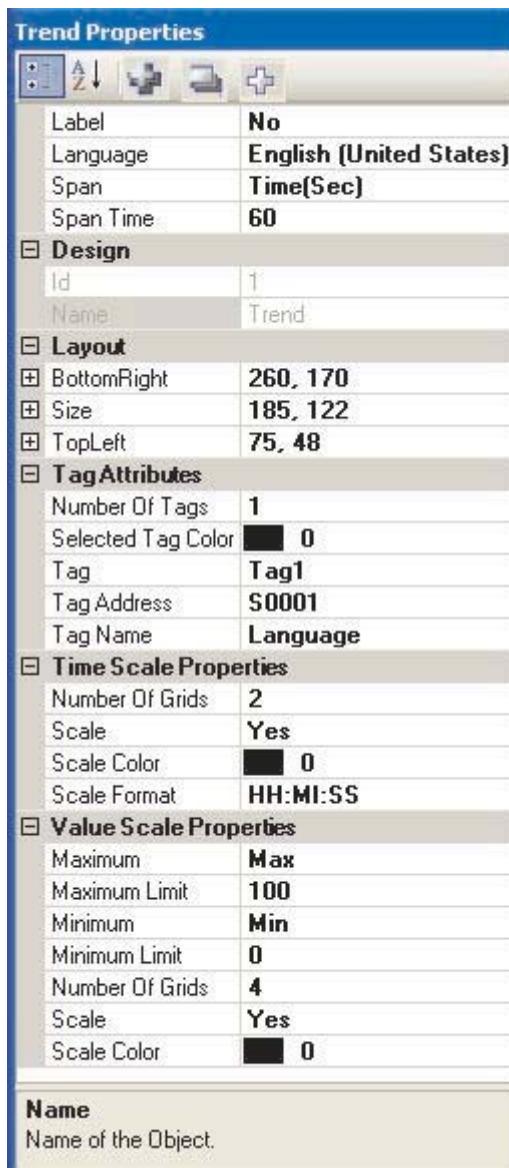
Tag Name:- Name of Numerical Type tag to be assigned to analog meter object is to be defined in this cell. Flyout from this cell will display the list of names of defined internal and PLC numerical type tags from tag data base. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

Value-End Tag:- End value to be assigned for Analg meter object to make the analog meter needle displacement limit upto this. By default this value is '500'.

Value-Start Tag:- Start value to be assigned for Analg meter object to make the analog meter needle displacement limit upto this in reverse direction. By default this value is '0'.

### 5.3.9 Trend

Wizard to be used to display the continuous change of particular tag value with respect to real time. So that variation in tag value can be monitored at every instant. Property grid window on right side of the software screen will display the different sections and cell for defining the appearance parameters.



**Appearance:-**

This section is needed to set the general appearance of the trend object.

**Background Color :-** Background color of the trend object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the background color for multibargraph object is White.

**Error Message Font Color:-** The trend object offers the unique feature of specifying the parameter values runtime in the unit by passing through a tag. The trend object does the value validation check run time & if the values are found invalid then the message related to it, is shown in the message window to let the user know about it.

**Font:-** The error message can be displayed in two font formats, one with 5X7 or another with 7X14. The font type defined for error message by default is 5X7.

**Grid:-** To display the internal grid for X and Y axis value representation can be defined through this cell. This is an optional, if grid is desired by designer then 'Yes' has to be typed in this cell or else 'No' will not display the grid. By default it is 'Yes'.

**Grid Color:-** Grid color of the trend object can be changed through this cell. The flyout will display color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the grid color for trend object is 'Black'.

**Label:-** This cell is to define if designer needs to specify some heading to the trend object. Text heading with different color, background, font size can be defined to trend object at its Top or Bottom position. If selected as 'Yes' further following cells related to label properties are enabled. By default Label for object is not assigned. This cell has 'No' information. This label can be defined only at the top position of the Real trend object.

Label	Yes
Label Font	Arial, 9pt
Label Text	Label
Label Text Color	 0

**Label Font :-** Properties related to font of text to be entered in Label for trend object is listed. This Label Text Font cell has a button to enhance with the list of font related system properties or a '+' button which will list out the properties for font of text, which can be edited from the cells. Here designer can edit Font, from this cell information.

**Label Text :-** Designer can define his/her own text to define the label for an trend object. Designer can use alphanumeric characters for the same. By Default the Text is 'Label'.

**Label Text Color :-** Text of the Label can be changed to differnet colors. To Set the text color for the label of trend object, designer can define the any available color as per the product display type seletced. By default the Text color of Label of button object is 'Black'.

**Language:-** To set the desired language to the text of trend object from the list of languages defined in Language settings of application project. This is the common button object properties, for more details refer section of 5.3.1.

**Span:-** The format to represent the span time can be defined through this cell in two ways one with fixed Time in seconds or with defining tag to enter the desired time span value in it.

**Span-Time(Sec):-** If Time (in Sec) is selected then user can define the time in span time for only once. This is fixed with one download of application.

**Span Time:-** This cell indicates the value in seconds representing the interval on the X-axis, which is the real time axis. By default this cell has time value as 60 seconds. This cell is displayed only if Span cell is defined with "Time[Span]" This value can be changed from 0-65535.

**Span-(Tag):-** If Tag is selected in span cell then user will have to define the tag on whose value the Span time on X axis for Real trend object will be defined. With defining tag user can change the span time from unit screen itself through any Data Entry enabled objects.

**Span Time Tag Address:-** Numerical Type tag is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. The value of this tag will be assigned as time in seconds for representind real time X axis. Selecting particular tag will display the respective tag name in following Tag name cell.

**Span Time Tag Name:-** Name of Numerical Type tag to be assigned to analog meter object is to be defined in this cell. Flyout from this cell will display the list of names of defined internal and PLC numerical type tags from tag data base. The value of this tag will be assigned as time in seconds for representing real time X axis. Selecting particular tag name will display the respective Tag address in above Tag Address cell.

**Layout:-** To embed the trend object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

**Time Scale Properties:-**

Here the parameters related to display the internal appearance with respect to time scale i.e. X Axis is defined. The properties to display the X axis of Trend object in better format are related to number of Grids , Scale , Scale color and scal format.

Time Scale Properties	
Number Of Grids	2
Scale	Yes
Scale Color	<input checked="" type="checkbox"/> 0
Scale Format	HH:MI:SS

Number of Grids:- Number of grids that can be drawn in trend object is to be defined in this cell. Maximum 10 such grids can be drawn. By default the number of grids defined are 2.

Scale:- To scale each grade on time span scale i.e X axis is optional. If enabled "yes" then at bottom of each grid scaling in real time hours and minutes is displayed, corresponding scale color and scale format cell will be displayed in following cell. If scale cell is disabled "No" then X axis of Trend object is displayed Blank.

Scale Color:- Color of the scales defined on X Axis can be defined through this cell. Flyout to this cell will display the Color dialog box, with supported colors for the product. If product is with Monochrome display then available colors are 16 Grey scale and if product is with Color display then available colors are 256 RGB Colors. By default the grid color for trend object is 'Black'.

Scale Format:- Scale to be defined in X axis can be displayed in various formats of Hour:Minute:Seconds(HH:MI:SS) or Hour:Minute(HH:MI).

**Value Scale Properties:-**

Here the parameters related to display the internal appearance with respect to value scale i.e. Y Axis is defined. The properties to display the Y axis of Trend object in better format are related to minimum and maximum limit number of horizontal grids Scaling and its color.

Value Scale Properties	
Maximum	Max
Maximum Limit	100
Minimum	Min
Minimum Limit	0
Number Of Grids	4
Scale	Yes

Maximum:- Maximum Scale for Y axis can defined in fixed format style or through tag whose value can be changed through unit screen. Designer can define either Max or Tag in this cell.

Maximum-Max:- If Max is selected in this cell then, following cell with Maximum limit is enabled. By default this cell has Max selection. This is the maximum fixed limit upto which trend in vertical direction can be moved.

Maximum Limit :-The maximum value that has to be assigned to Y Axis, upto which tag value defined for Trend object can vary. By Default the value in this cell is 100. User can define value as per the tag Data type selected.

Maximum-Tag:- While running the application, if user wish to change the maximum Y limit from unit, designer will have to select the "Tag" option from the flyout of this cell. Selecting Tag in this cell will enable the related following cells "Tag Address" and "Tag Name".

Maximum Time Tag Address:- Numerical Type tag is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. The value of this tag can be changed from the running application to define the maximum Y limit value for vertical axis of Trend object. Selecting particular tag will display the respective tag name in following maximum Tag name cell.

Maximum Tag Name:- Name of Numerical Type tag to be assigned to Y limit of trend object is to be defined in this cell. Flyout from this cell will display the list of names of defined internal and PLC numerical type tags from tag data base. The value of this tag will be assigned as value to limit Y axis so as to display the trend upto this value. Selecting particular tag name will display the respective Tag address in above Maximum Tag Address cell.

Minimum:- Minimum Scale for Y axis can be defined in fixed format style or through tag whose value can be changed through unit screen. Designer can define either Min or Tag in this cell.

Minimum-Min:- If Min is selected in this cell then, following cell with minimum limit is enabled. By default this cell has Min selection. This is the Minimum fixed limit upto which trend in vertical downward direction can be moved.

Minimum Limit :-The minimum value that has to be assigned to Y Axis, upto which tag value defined for Trend object can vary. By Default the value in this cell is 0. User can define value as per the tag Data type selected.

Minimum-Tag:- While running the application, if user wish to change the minimum Y limit from unit, designer will have to select the "Tag" option from the flyout of this cell. Selecting Tag in this cell will enable the related following cells "Minimum Tag Address" and "Minimum Tag Name".

Minimum Time Tag Address:-Numerical Type tag is to be defined in this cell. Flyout from this cell will display the list of defined internal and PLC numerical type tags from tag data base. The value of this tag can be changed from the running application to define the minimum Y limit value for vertical axis of Trend object. Selecting particular tag will display the respective tag name in following minimum Tag name cell.

Minimum Tag Name:- Name of Numerical Type tag to be assigned to Y limit of trend object is to be defined in this cell. Flyout from this cell will display the list of names of defined internal and PLC numerical type tags from tag data base. The value of this tag will be assigned as value to limit Y axis so as to display the trend upto this value. Selecting particular tag name will display the respective Tag address in above MInimum Tag Address cell.

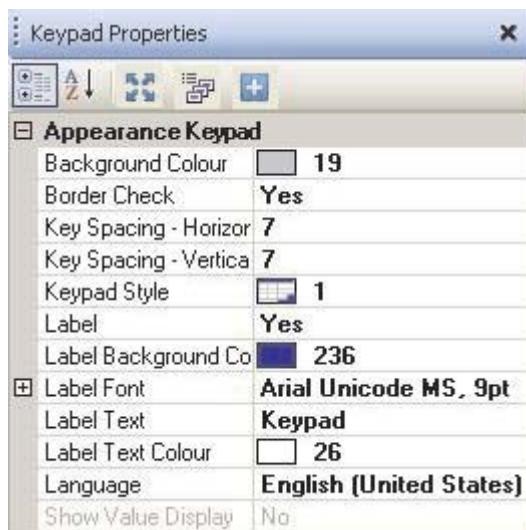
Number of Grids:- Number of Grids desired across X axis to the values of Y axis can be defined in this cell. By default number of grids are "4", but user can define it upto "10". Intermediate limits between Low and High Limits varies proportionately with the number of grids defined.

Scale:- To display the scales in Y axis is optional. By default it is enabled "Yes". If selected as "No", then limit values in Y axis is not displayed.

Scale Color:- Color can be assigned to the limit values to be displayed in Y axis. The color dialog box will be popuded from this cell. Available color will depend upon the selected product's display type. If product is with monochrome display then color dialog box will show only 16 monochrome colors and if product is with Color display then color dialog box will display 256 colors in combination of RGB.

### 5.3.10 Keypad

Static keypad which can be either embedded on screen to enter in to the data entry object without popup keypad or these keypad can be embedded on popup screen to recall it from particular data entry object. The value of tags with Unsigned / Signed integer, Float, Binary, Hexadecimal data types can be changed through the keypad. From property grid windows, keypad properties such as Keypad base color, Key's color, height and width of keys, keypad in different styles, even Text of the keys can be modified.



#### Appearance Keypad:-

The appearance of the keypad can be modified through this section. Designer can modify the Gap width and height between 2 keys, Background color of the object, Label for particular Keypad Object or style of the keypads can be selected from this section.

Background Color:- Background Color of the keypad object can be modified through this cell. Available colors in this cell will depend upon the selected product's display type. If product is with monochrome display then available colors will be 16 grey Scale colors and if display type is color then available colors will be 256 colors in combination of base RGB colors. By default background color to the keypad object is "Grey(19)".

Border Check:- Designer can either wish to draw the border to the object. This is an optional, by default border is provided to the keypad object.

Display area Check:- This is Disabled , greyed out with message as "Yes" or "No". If keypad is embedded on base screen then message is "No" and if keypad is embedded on popup screen then message is "Yes" with display area on keypad object is displayed to see the value entered through the particular Keypad Object

Gap Height:- The pixel height gap between the two keys can be defined from this cell. By default the height gap is with 7 number of pixels. Designer can define it in between 6 and 49 number of pixels, provided the keypad object does not go out of the screen.

Gap Width:- The pixel width gap between the two keys can be defined from this cell. By default the width gap is with 7 number of pixels. Designer can define it in between 6 and 49 number of pixels, provided the keypad object does not go out of the screen.

Label:- To represent the keypad object with different name can be availed through this cell. Any alphanumeric characters can be entered in this cell. By default the text in this cell is "Label".

Label Background Color:- Background color of the text entered in above "Label" cell can be modified through this cell. By Default the background color defined in Label cell is "Blue(236)"

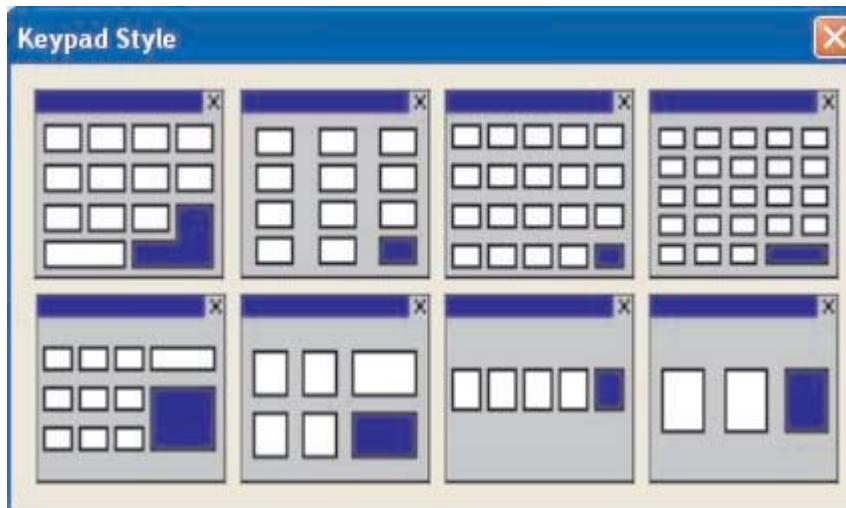
Label Font:- Parameters related to Font of Text entered in Label cell can be modified through this cell. All windows parameters displayed for font of any text can be modified through this cell. Parameters which can be modified to display Text in various format are such as Font type name, Size, Whether Bold/Normal, italic, Striked out, underline etc. By default the font is with Arial name and point 9 Size with rest all parameters as normal.

Label Text Color:- Color for the Text entered in Label cell can be defined through this cell. By default the color of the text is "White(26)".

Label Check:- To display the Label for Keypad object is optional , by default this cell is selected with "Yes" with label displayed on Top of keypad. If selected as "No" then above properties related to Keypad label will be disabled.

Language:- To set the desired language to the label text for Keypad object from the list of languages defined in Language settings of application project is to be done through this cell.

Style:- Various predefined styles of keypads are available from the Flyout to this cell. Following are the predefined keypad.



Designer can even modify any of the selected predefined keypad from the Keys Properties.

#### **Design:-**

Name:- Display the name of the selected object as “Numeric Keypad”.

Layout:- To embed the keypad object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

#### **KeyProperties:-**

This section is enabled and displayed in property grid window of keypad properties, only when any of the key from the keypad object is selected. This section is useful to modify the key name, key task and rest all properties related to color and font display.

<b>Keys Properties</b>	
Back Colour	<input type="color"/> 236
Display Text	Yes
Keypad Key Task	Accept Data Entry
Style Index	<input type="color"/> 3
Text	ENT
Text Colour	<input type="color"/> 26

Back Color:- Back color for the specific selected key can be defined from this cell. By default all keys are with Grey Color (19).

Keypad Key task:- Designer can modify the key task from the available key specific task desired to be assigned to the specific selected key. By default the task assigned to keypad depends upon the style of keypad and the Key selected from the Keypad Object.

Style Index:- Display the style number of the selected key pad from the predefined keypads. Predefined keypads are already displayed in above section.

Text:- Default text defined for the specific key is displayed in this cell. Designer can change the text. Any alphanumeric text can be entered in this cell.

Text Check:- This cell has optional properties. If Selected “No”, then Text from the key is disabled and made blank with disabling Text Color cell also. By default Text Check cell is Enabled with “Yes”.

Text Color:- Color to the text of the particular specific selected key can be changed. Dialog box with color palettes will be displayed from this cell with available colors as per the selection of the product's Display type selected. By default Text Color is “Blue(236)”.

### 5.3.11 ASCII Keypad:

ASCII keypad is used to enter the ASCII data to Tag embedded on screen with ASCII Data Type. It is pre-defined keypad with specific keys with ASCII Characters. With help of such keypad String of characters sent to / from PLC/other device can be displayed or transmitted. Through the use of properties from property grid window designer can change the aesthetic view of the key pad object with Shape, Size and color of the text embedded on specific keys of the ASCII Keypad object.



#### ASCII Keypad Properties:-

The appearance of the ASCII keypad can be modified through this section. Designer can modify the Background color of the object, Label for particular Keypad Object or style of the keypads can be selected from this section.

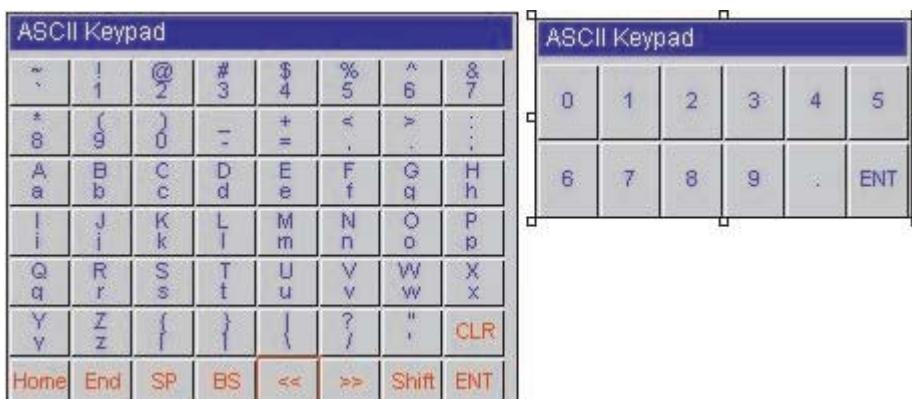
Back Color:- Background Color of the keypad object can be modified through this cell. Available colors in this cell will depend upon the selected product's display type. If product is with monochrome display then available colors will be 16 grey Scale colors and if display type is color then available colors will be 256 colors in combination of base RGB colors. By default background color to the keypad object is "Grey(19)".

Display area Check:- This cell is Disabled , grayed out with message as "Yes" or "No". If ASCII keypad is embedded on base screen then message is "No" and if ASCII keypad is embedded on popup screen then message is "Yes" with display area on keypad object is displayed to see the value/String entered through the particular ASCII Keypad Object.

Gap Height:- The pixel height gap between the two keys is displayed in this cell. By default the height gap is with 2 number of pixels. This Cell is Grayed out(disabled) hence the Gap Height can not be changed by designer.

Gap Width:- The pixel width gap between the two keys is displayed in this cell. By default the width gap is with 2 number of pixels. This Cell is Grayed out(disabled) hence the Gap Width can not be changed by designer.

Keypad Style:- Various predefined styles of ASCII keypads are available from the Flyout to this cell. Following are the two predefined ASCII keypad.



Label Check:- To display the Label for ASCII Keypad object is optional , by default this cell is selected with "Yes" with "ASCII Keypad" text displayed on Top of ASCII keypad. If selected as "No" then following property related to ASCII Keypad label will be disabled.

Label Font Color:- Color for the Text entered in Label Text cell can be defined through this cell. By default the color of the text is "White(26)".

Label Text:- To represent the ASCII keypad object with different name can be availed through this cell. Any alphanumeric characters can be entered in this cell. By default the text in this cell is "ASCII Keypad".

Label Back Color:- Background color of the text entered in above "Label Text " cell can be modified through this cell. By Default the background color defined in Label cell is "Blue(236)"

Language:- To set the desired language to the label text for ASCII Keypad object from the list of languages defined in Language settings of application project is to be done through this cell.

#### **Design:-**

Name:- Display the name of the selected object as "**ASCII Keypad**".

**Layout**:- To embed the keypad object on screen at desired location with its coordinates position from Top left corner of the screen. Moving the text object on screen with mouse cursor will show the corresponding pixel position of the placed object. For more details please refer Layout section.

#### **KeyProperties:-**

This section is enabled and displayed in property grid window of keypad properties, only when any of the key from the keypad object is selected. Through this section of selected ASCII Keypad Objects only the following parameters of Key Text color and Key Background color can be modified, rest none of the properties related to key can be modified.



Key Background Color:- Background color for the specific selected key can be defined from this cell. By default all keys are with Grey Color (19).

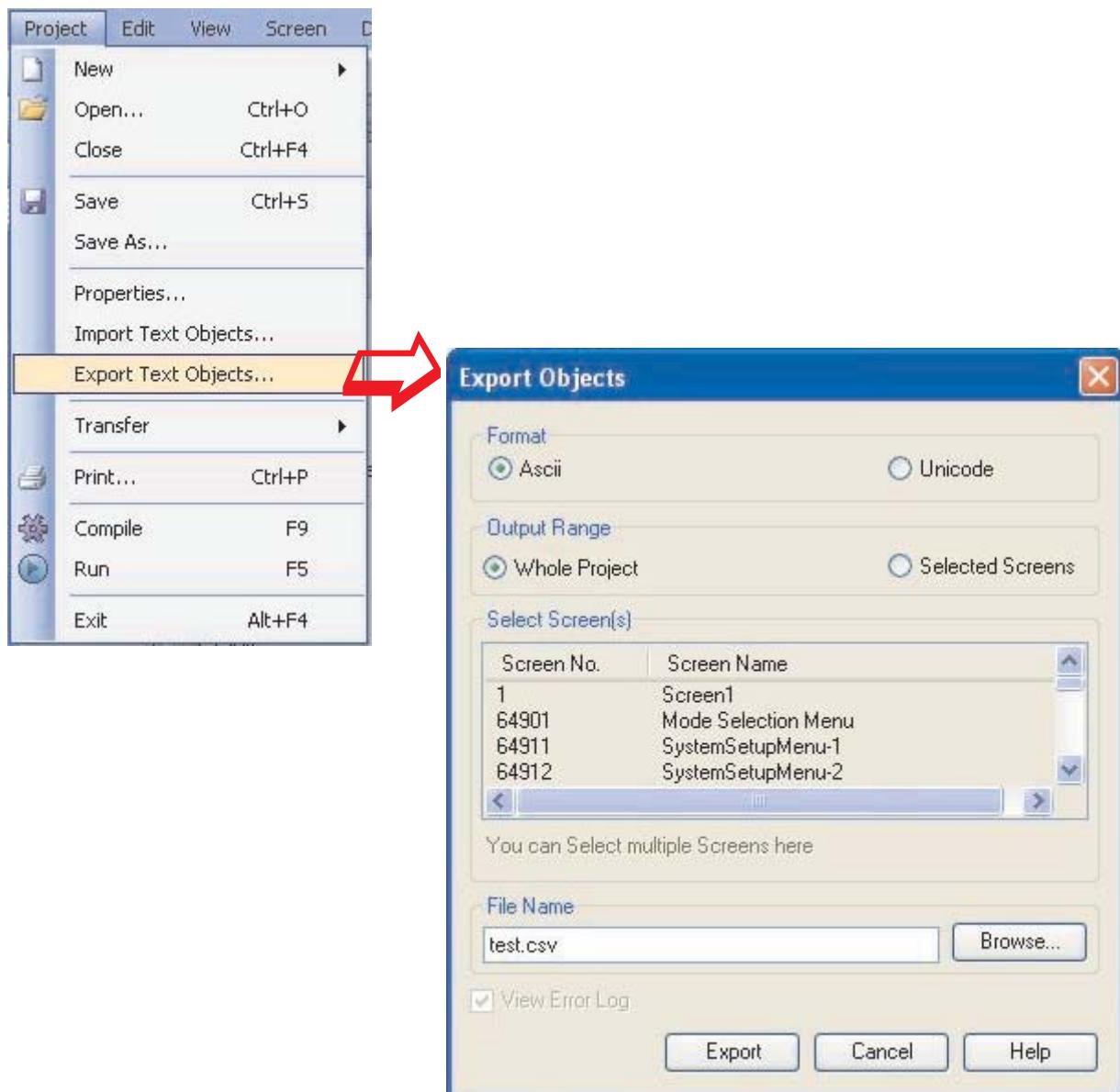
Key Text Color:- Color to the text of the particular specific selected key can be changed. Dialog box with color palets will be displayed from this cell with available colors as per the selection of the product's Display type selected. By default Text Color is "Blue(236)" or "Red(57)".

## 5.4 Import & Export Multilingual Text Objects

This exporting & importing object utility is useful for all text objects which contains text in multiple language. (e.g. button wizards, multilingual text etc.). The information will be stored in “\*.csv” format. So it will be easy for user to change the text for the properties for different languages. This change in the “\*.csv” file can be import in the project.

### 5.4.1 Export Text object

Step-1 After creating FP application for language conversion; launch “Export text object” wizard from “Project” menu as shown below:



In the “Export Object” dialog box:

### **1. Format**

Choose the format of the language conversion.

Note: Format may be kept as “Unicode” by default; provided that, importing text should be in “Unicode” format only.

ASCII format is that language format, which employs a 7-bit coding scheme, supporting 128 (2<sup>7</sup>) characters, which is quite satisfactory for both upper case and lower case letters of the English alphabet and similarly simple Roman alphabets, Arabic numerals, punctuation marks, a reasonable complement of special characters, and a modest number of control characters.

The Unicode format developed the original coding scheme to support multiple complex alphabets such as Chinese, Devanagri (Hindi), Japanese, and Korean. In the Japanese language, for example, even the abbreviated Kanji writing system contains well over 2,000 written ideographic characters; the Hirigana and Katakana alphabets add considerably to the complexity. As 7- and 8-bit coding schemes cannot accommodate such complex alphabets, computer manufacturers traditionally have taken proprietary approaches to this problem through the use of two linked 8-bit values. This “UNICODE” format supports 65,536 (2<sup>16</sup>) characters, which accommodates the most complex alphabets. Unicode accommodates pre-existing standard coding schemes, using the same byte values for consistency. Unicode encodes all characters in byte sequences varying from one to five bytes.

### **2. Output Range**

Here you can select whole project or selected screens that are requires conversion.

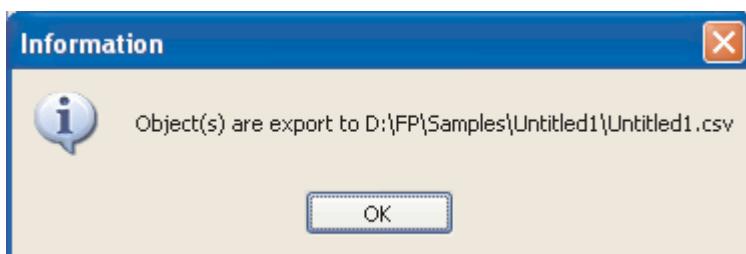
### **3. Select Screen**

Here list of screens are seen.

### **4. File Name & Browse**

Here, you can specify the file name to exported CSV format file. And from “Browse” tab, you can select path for saving on PC.

Step -2. Now press “Export”. It gives information about exporting text object as shown below:



Step -3. After that, you can open this “\*.csv” file in “\*.xls” sheet; where you can find information about text object/s such as Screen number, Screen Name, Shape Type, Shape object ID and languages used in application as shown below:

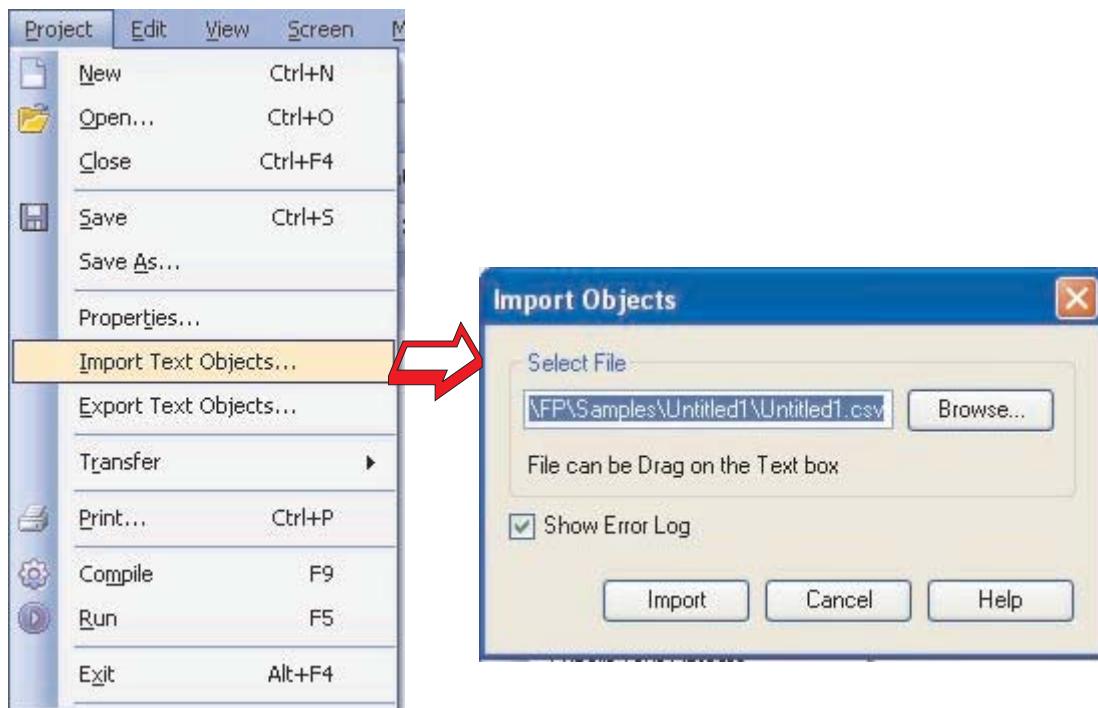
#	Import-Export Objects				
#	Project Name	Untitled2			
#	Screen Name	Shape Type	Shape ObjectId	Property	English (United States)
	Screen1	Advance bit button	3673	On Text	On
	Screen1	Advance bit button	3673	Off Text	Off
	Screen1	Advance bit button	3673	Label	Label
	Mode Selection Menu	Advance bit button	3335	On Text	FHWT
	Mode Selection Menu	Advance bit button	3335	Off Text	Off
	Mode Selection Menu	Advance bit button	3335	Label	Label
	Mode Selection Menu	Advance bit button	3336	On Text	Sys Setup
	Mode Selection Menu	Advance bit button	3336	Off Text	Off
	Mode Selection Menu	Advance bit button	3336	Label	Label
	Mode Selection Menu	Advance bit button	3337	On Text	Exit
	Mode Selection Menu	Advance bit button	3337	Off Text	Off
	Mode Selection Menu	Advance bit button	3337	Label	Label
	SystemSetupMenu-1	Advance bit button	3341	On Text	TouchScreen Calibrate
	SystemSetupMenu-1	Advance bit button	3341	Off Text	Off
	SystemSetupMenu-1	Advance bit button	3341	Label	Label
	SystemSetupMenu-1	Advance bit button	3342	On Text	Brightness Control
	SystemSetupMenu-1	Advance bit button	3342	Off Text	Off
	SystemSetupMenu-1	Advance bit button	3342	Label	Label
	SystemSetupMenu-1	Advance bit button	3343	On Text	RTC Settings
	SystemSetupMenu-1	Advance bit button	3343	Off Text	Off
	SystemSetupMenu-1	Advance bit button	3343	Label	Label
	SystemSetupMenu-1	Advance bit button	3344	On Text	Com Port Settings
	SystemSetupMenu-1	Advance bit button	3344	Off Text	Off
	SystemSetupMenu-1	Advance bit button	3344	Label	Label

Here you can change name in other language you want & then save as file in again “\*.csv” foamt.

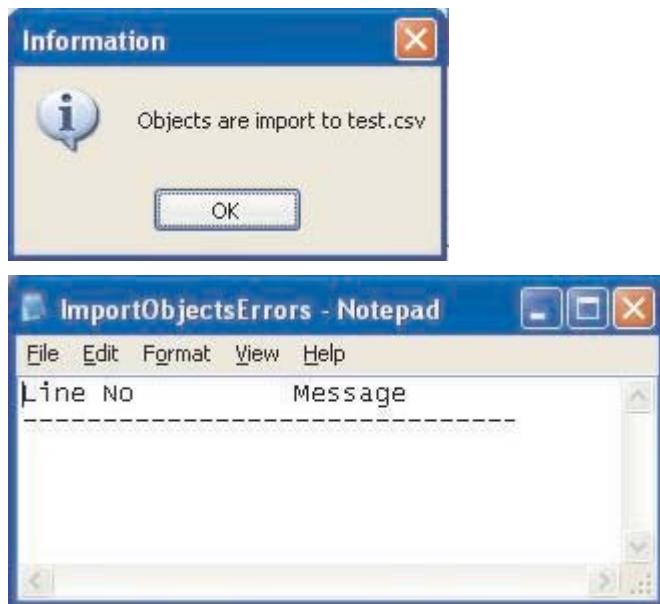
Please note that, we can use the “\*.csv” file prepared in project for the same project only. Because while exporting text object; it gives screen numbers & shape ID etc.

### 5.4.2 Import Text object

Step-1 Once, you change the desire changes in exported “\*.csv” file, you can import the same in the project as shown below:

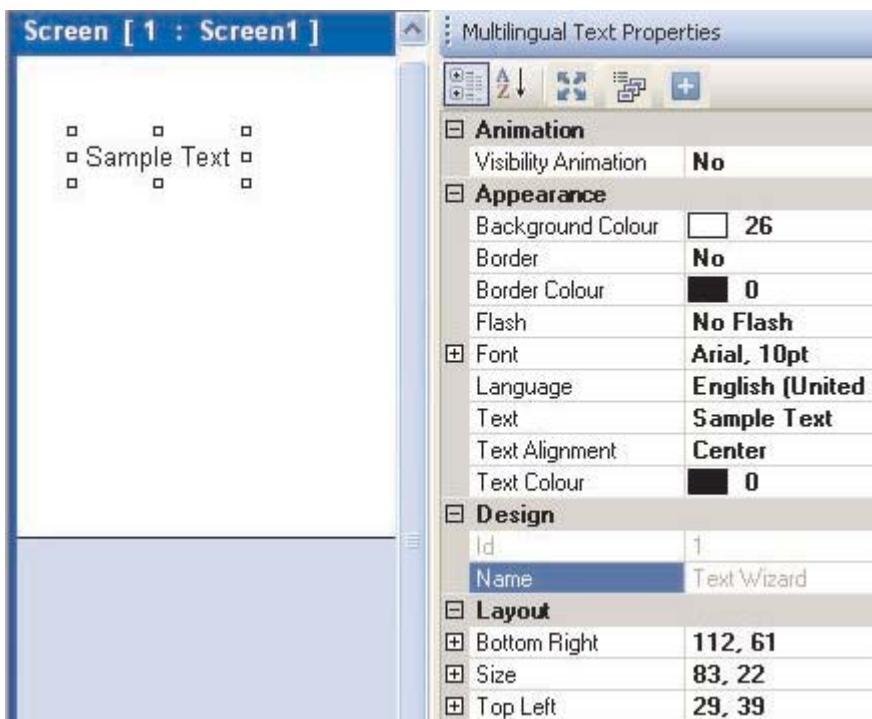


Here again choose a format and select path; where exported csv file is saved. Then press “Import”. If during this exporting & importing text object, any operation is done e.g.; if any language is added or any text button is added or deleted; it gives error in notepad as shown below:



## 5.5 Multi-language text wizard

The Multi-Language Text Wizard allows the designer to configure text objects for use in a multiple language project.



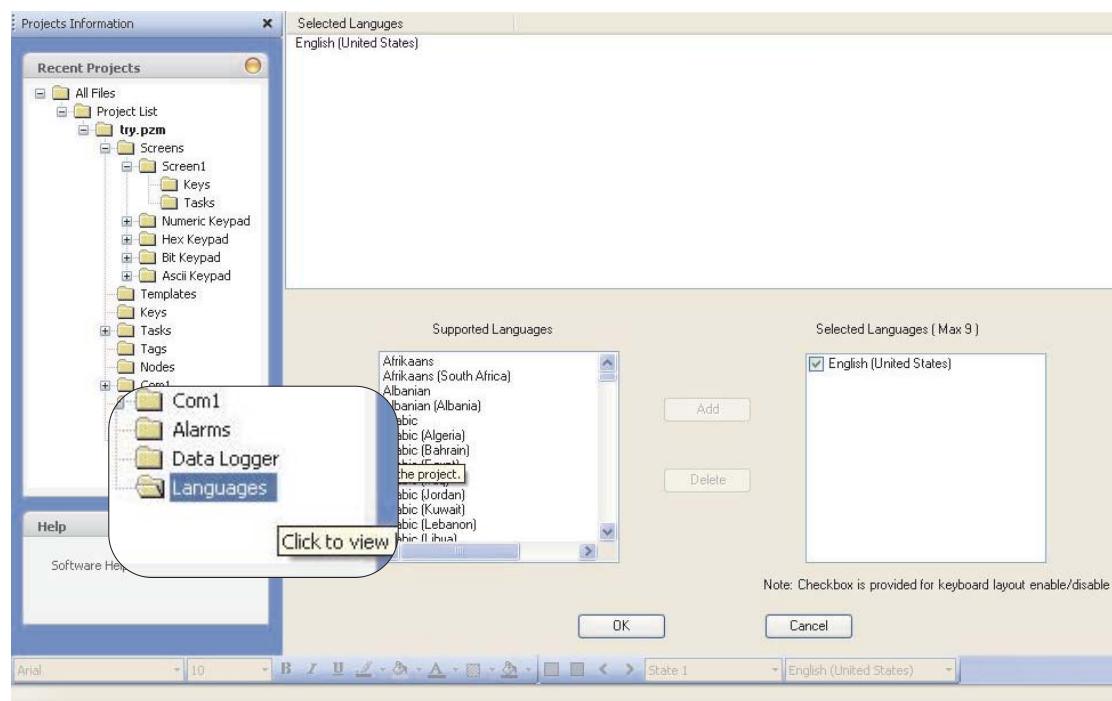
Text properties

Appearance:

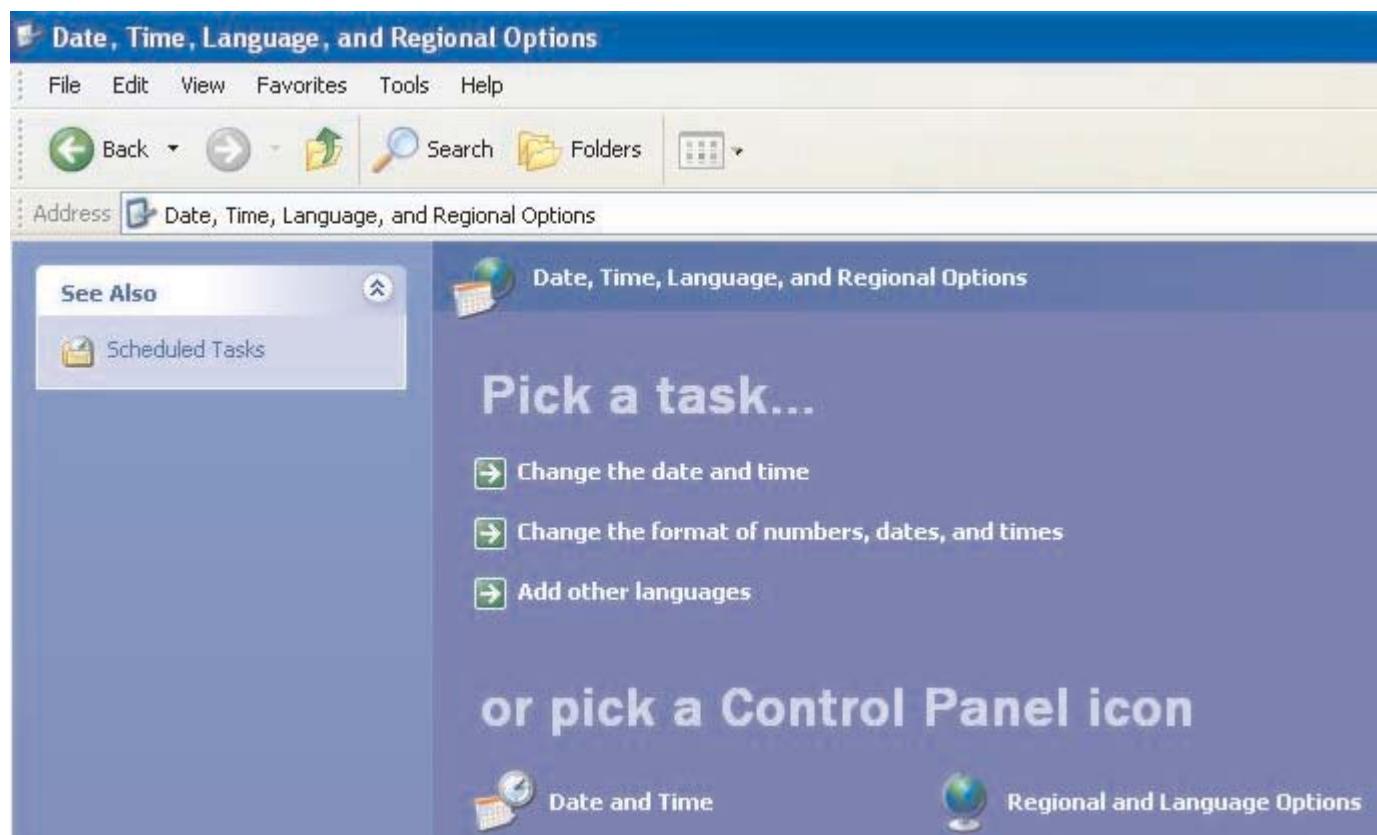
1. **Background Color** : Sets the Background text color from the palette.
2. **Border** : If enabled, the text object will have a border.
3. **Border Color** : Sets the color of the border from the palette.
4. **Font** : Selects Windows® Font, Font Style and Font size.
5. **Language** : Displays the list of languages configured in the Unit Settings.
6. **Text** : The object can have a maximum of 150 characters.
7. **Text color** : Sets the text color from the palette.
8. **TextAlignment** : Sets the text alignment.

### 5.5.1 Configure Language

The ARGOS FP products can be configured for a different languages from configure language wizard. To enable multilanguage support, the user has to add the languages he wants to use in the application here.



The list box on the left side shows which languages are installed on your computer. The list box on the right side lists the languages to be used in the project. The languages must be installed on your computer to appear in the installed languages list. Languages can be installed on a computer by using the Windows task "Add other languages". This task is located in the Regional and Language Options selection of the Control Panel menu as shown on the following page.





Language installation uses the following screen.



**Note:** Parameters not supported for the product are grayed out.

### 5.5.2 Displaying Multiple Languages in Unit

System Register S0001 controls the language to be displayed at run time. User can use 'Write value to tag' task for changing value in system register.

**Note :** If SW0001 has value other than 1 to 9 then English language is displayed.

Example:

If user has configured project for 3 different languages namely English, Korean, Japanese then following tasks can be used to change language at run time.

English - Write value to Tag SW0001 with value 1

Korean - Write value to Tag SW0001 with value 2

Japanese - Write value to Tag SW0001 with value 3

In this way different languages can be displayed in unit at run time.

### 5.5.3 List of text objects which used multiple languages

Objects	Property
Multilingual Text	Text
Goto Screen	ON text, OFF text
Goto Next Screen	ON text, OFF text
Goto Prev Screen	ON text, OFF text
Goto Popup Screen	ON text, OFF text
Set	ON text, OFF text
Reset	ON text, OFF text
Toggle	ON text, OFF text
Hold On	ON text, OFF text
Hold Off	ON text, OFF text
Write Value to tag	ON text, OFF text
Sub Value from tag	ON text, OFF text
Add Value to Tag	ON text, OFF text
Add Tag A to Tag B	ON text, OFF text
Sub Tag B from Tag A	ON text, OFF text
Bit Button	ON text, OFF text, Label
Word Button	Text for 1-32 States, Label
Bit Lamp	ON text, OFF text, Label
Word Lamp	Text for 1-32 States, Label
Multiple Bargraph	Label, Bar label, Axis label
Trend	Label
Historical Trend	Label
Analog Meter	Label
Keypad	Label, Keys (text)(max keys 24 dependent on keypad style)
Ascii Keypad	Label

## **TASK MANAGEMENT**

In this chapter. . . .

- \* Background Task
- \* Tasks
  - PowerOn Tasks
  - Global Tasks
- \* Screen Tasks
  - Before Showing Tasks
  - While Showing Tasks
  - After Hiding Tasks

## 6.1 Background Task

If the following PLC tasks are present in while showing screen task list or in the global task list, these task are executed in the background loop.

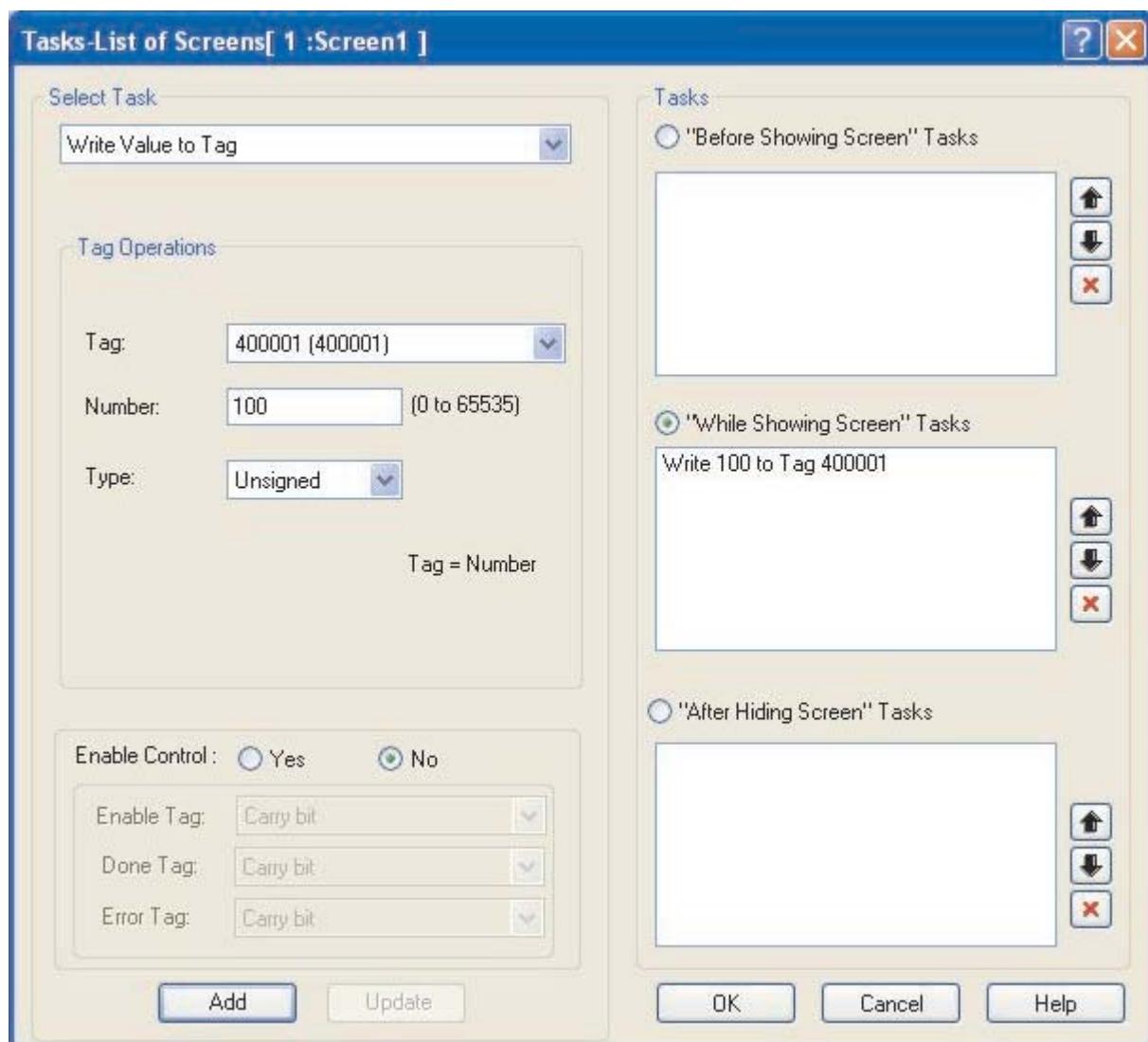
Recipe Tasks:

1. Copy RTC to PLC block
2. Copy HMI block to PLC block
3. Copy PLC block to HMI block

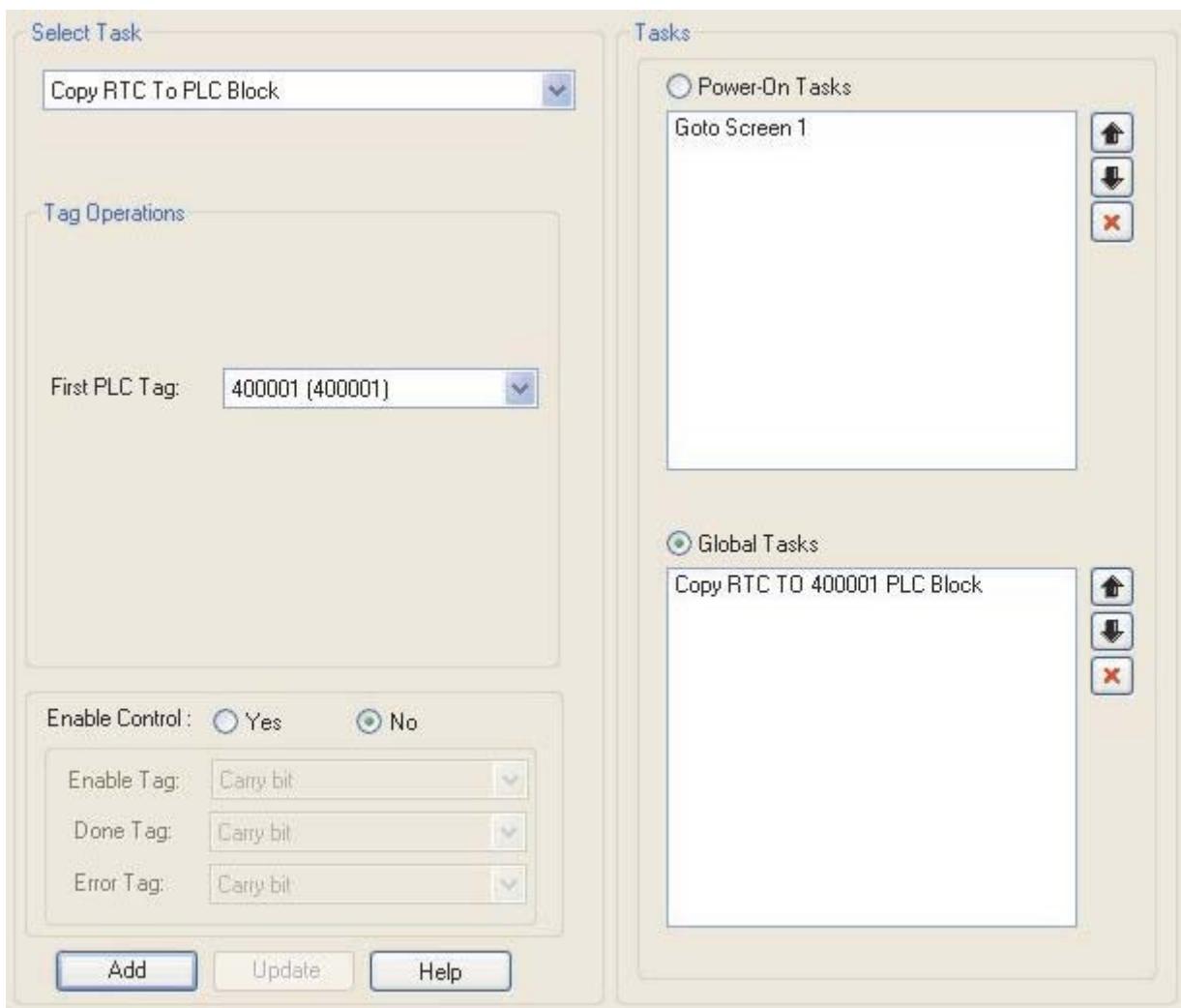
Other Tasks:

1. Write Values to tag (if tag is PLC tag)
2. Copy Tag B to Tag A (if Tag A is PLC tag)
3. Turn Bit ON (if Bit is PLC bit)
4. TURN Bit OFF (if Bit is PLC bit)

Example of "While Showing" task is as follows



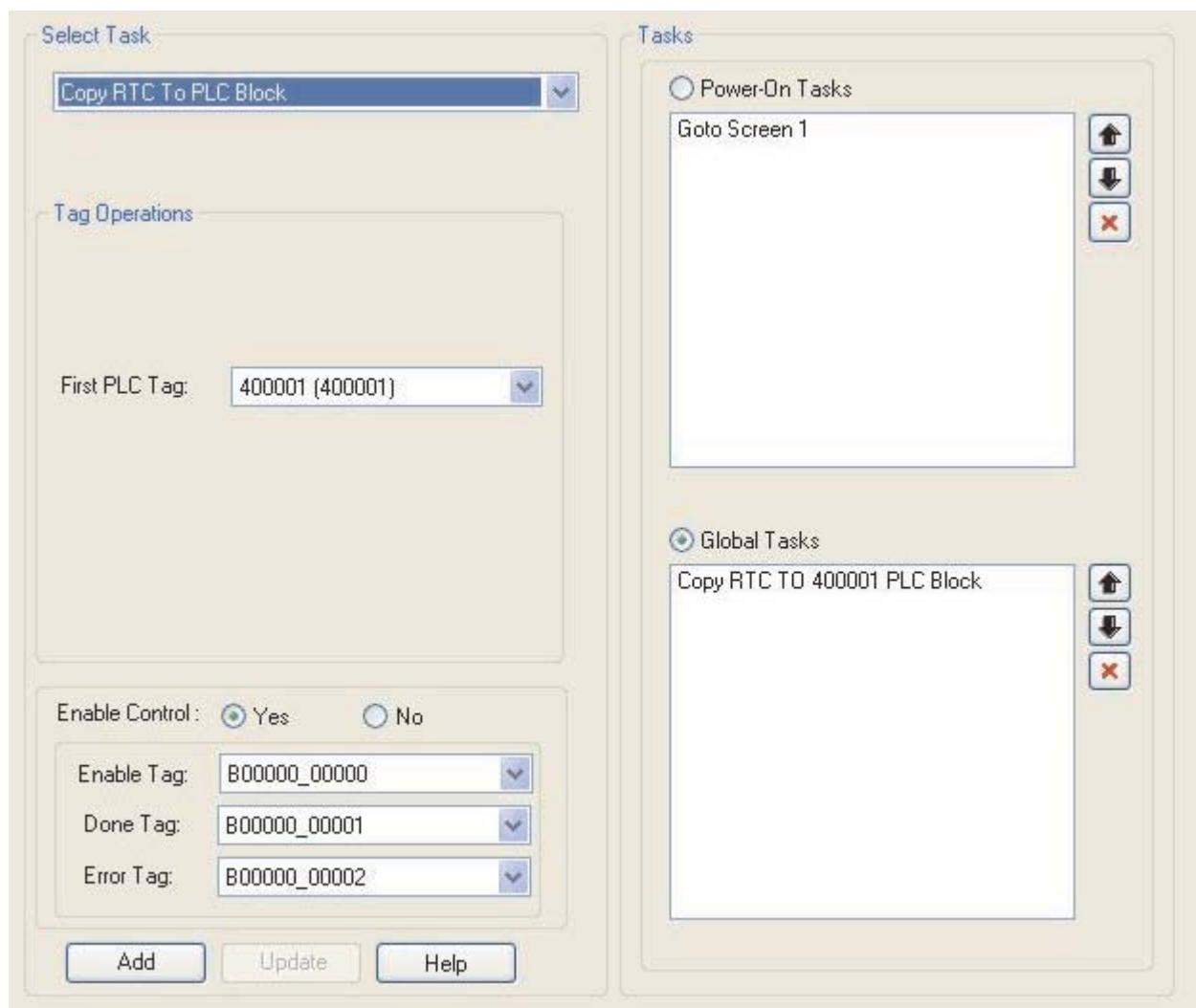
Example of global task is as below:



Number of tasks supported in background loop:

Type	FP4035T Models	FP4057T Models	FP4020 Models	FP4030 Models
Recipe Tasks	100	100	16	16
Other Tasks	512	512	16	16

**Enable Control for background tasks:** The enable control is activated for the background task by clicking yes for enable control. If enable control is activated, the Enable tag, Done tag and Error tag will be activated as shown below

**Enable tag:**

The task will be executed only when the value of the enable tag is made ON.

**Done Tag:**

The value of this tag will be made ON by HMI, when the task is executed by Background loop successfully. This value will be automatically reset by main loop, when the next time the task has to be executed.

**Error Tag:**

The value of this tag will be made ON by HMI, when the task is not executed successfully in background loop. This value will be automatically reset by main loop, when the next time the task has to be executed. There can be multiple reasons for error tag to set.

Example : if the task used is write value to any PLC tag, error tag can be set in following cases:

If this tag is not present in PLC

If write is not allowed to that PLC tag

If Plc returns some exception for write of that PLC tag etc.

The following coils can be used as Enable tag, Done Tag, Error Tag:

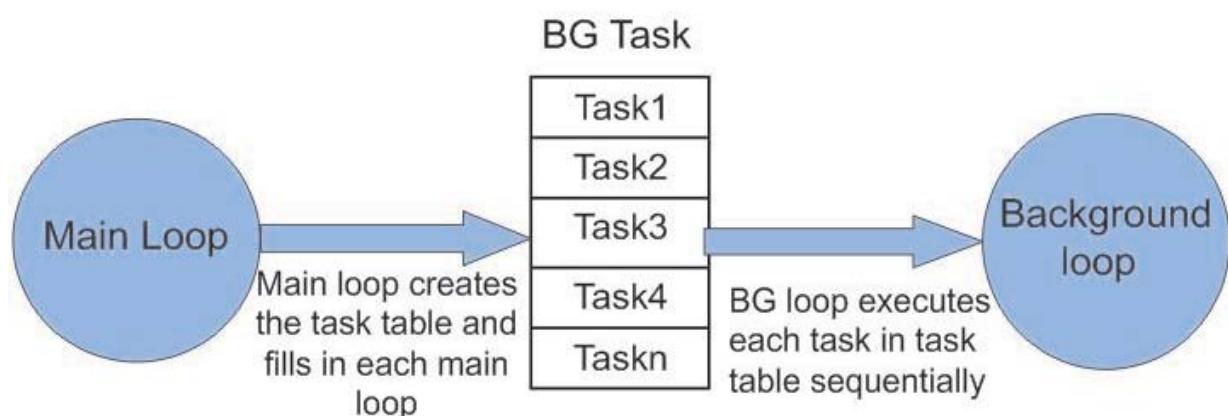
Sr. No.	Coils
1	Data Register coil accesses as bit addressed register
2	Input Coils
3	Internal Coils
4	IO configuration Coils
5	IO configuration register accessed as bit addressed register
6	Output coils
7	System coils
8	System Register bits accesses as bit addressed register
9	Timer coils
10	Counter coils

Please note that if the Retentive register is used in any task mentioned in above list, then that task will not be executed in background. Instead that task will be executed in main loop.

Example : If task Copy Tag B to Tag A is used in global task, Tag B is Retentive register tag and Tag A is PLC tag, then that task will be executed from mail loop.

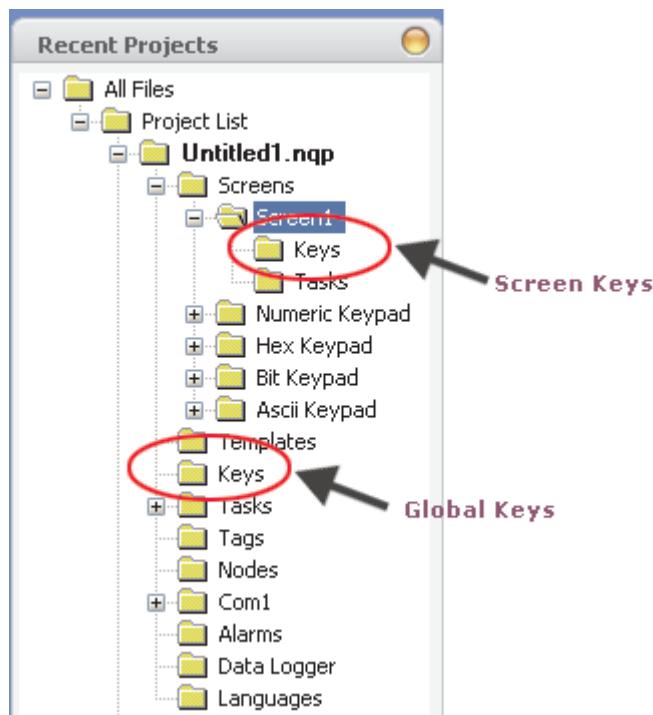
#### How does Background loop work?

From the above figure it is clear that task table is created by the main loop and the task table is updated in each main loop. The background loop executes each task in the task table sequentially. The main loop does not wait for the PLC task to be completed.



## 6.2 Various Tasks:-

Various list of tasks that can be performed on internal or PLC Tags at various desired instants after power on/off of the unit. The instants of these tasks are Power on of Unit, Global Tasks, with respect to particular screen tasks i.e. Before showing, While showing or After hiding respective screens Task, with respect to the pressing of Key task are at Press Task, Pressed Task and Release task. Key task can be performed through the hardware keys or through the button objects embedded through FlexiSoft Software.



Various Tasks through which we can perform list of operations at various Instants are:

- 1) PowerOn Task
- 2) Global Task
- 3) Screen Task
  - Hardware Keys (Press, Pressed, Released)
  - Screen showing Tasks (Before Showing, While Showing, After Hiding)
- 4) Global Keys (Press, Pressed, Released)

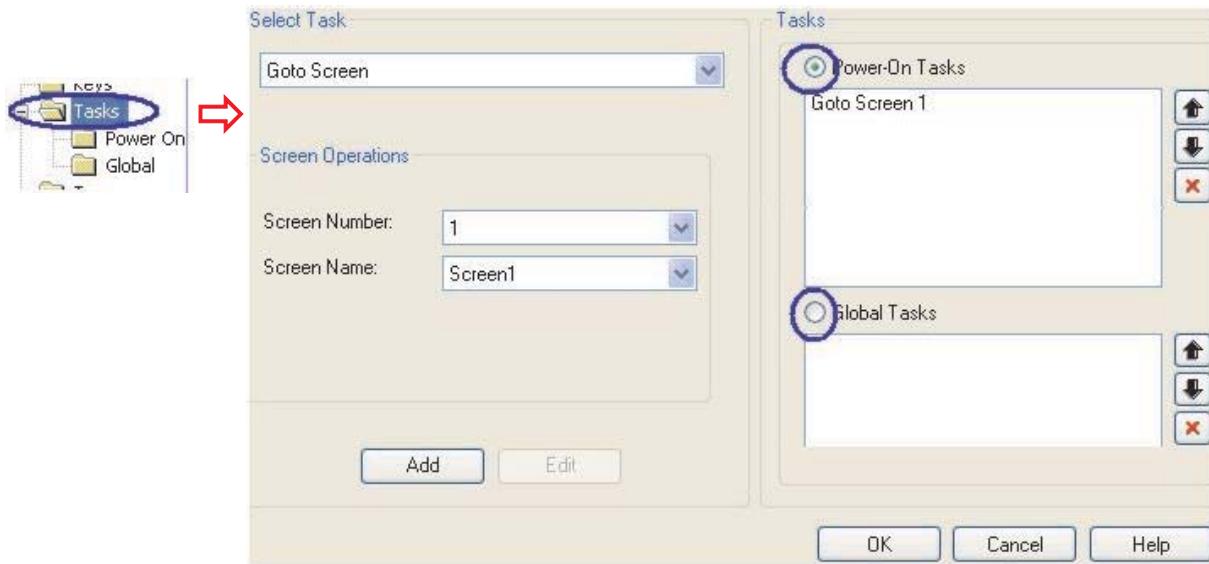
Tasklist which can be performed through all those above tasks are as shown in the Figure.

Some of the task operations are task specific, hence enabled in task list, only when particular task is selected.



**Tasks:**

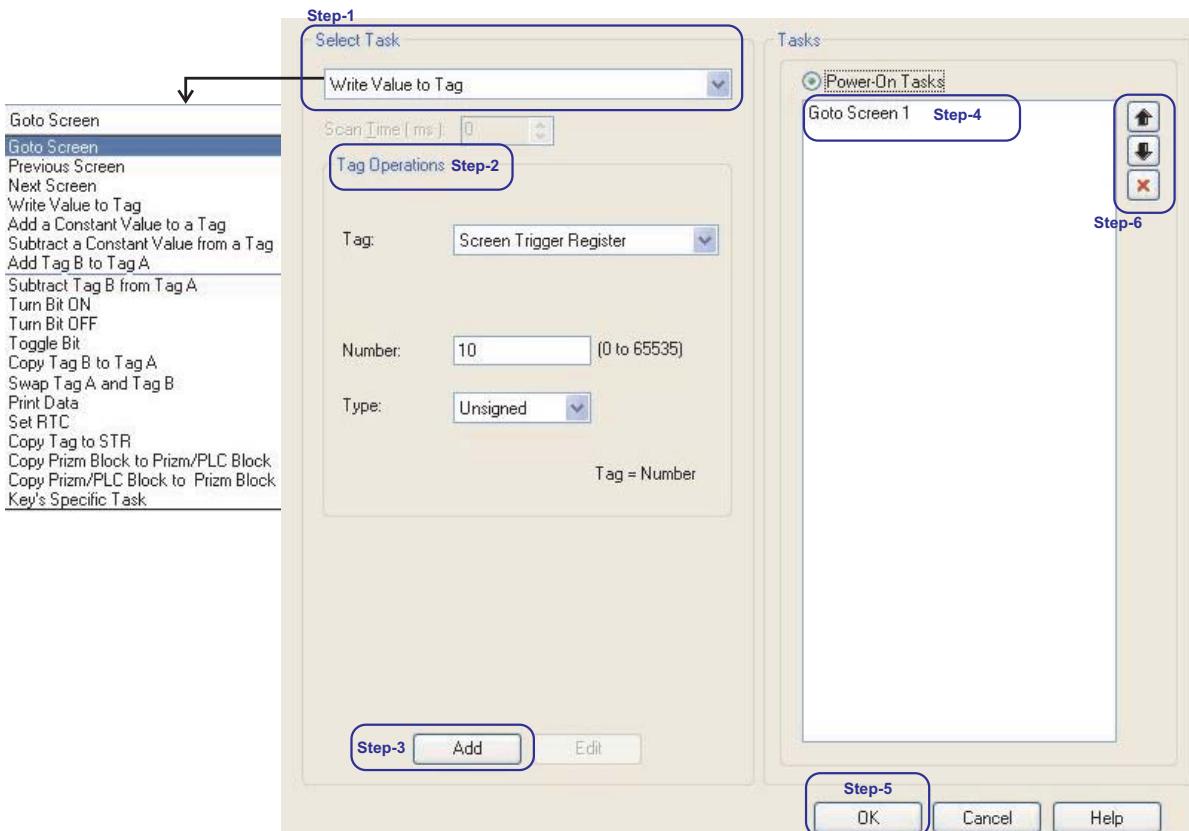
As shown in above figure, Tasks folder with option of Poweron Task and Global task can be configured from left side window of Recent Project Sections from Software. Through selection of this folder following screen can be observed.



Through Selection of Radio button , designer can select the task in which task operation is to be operated/ performed.

### 6.1.1 Power on Task

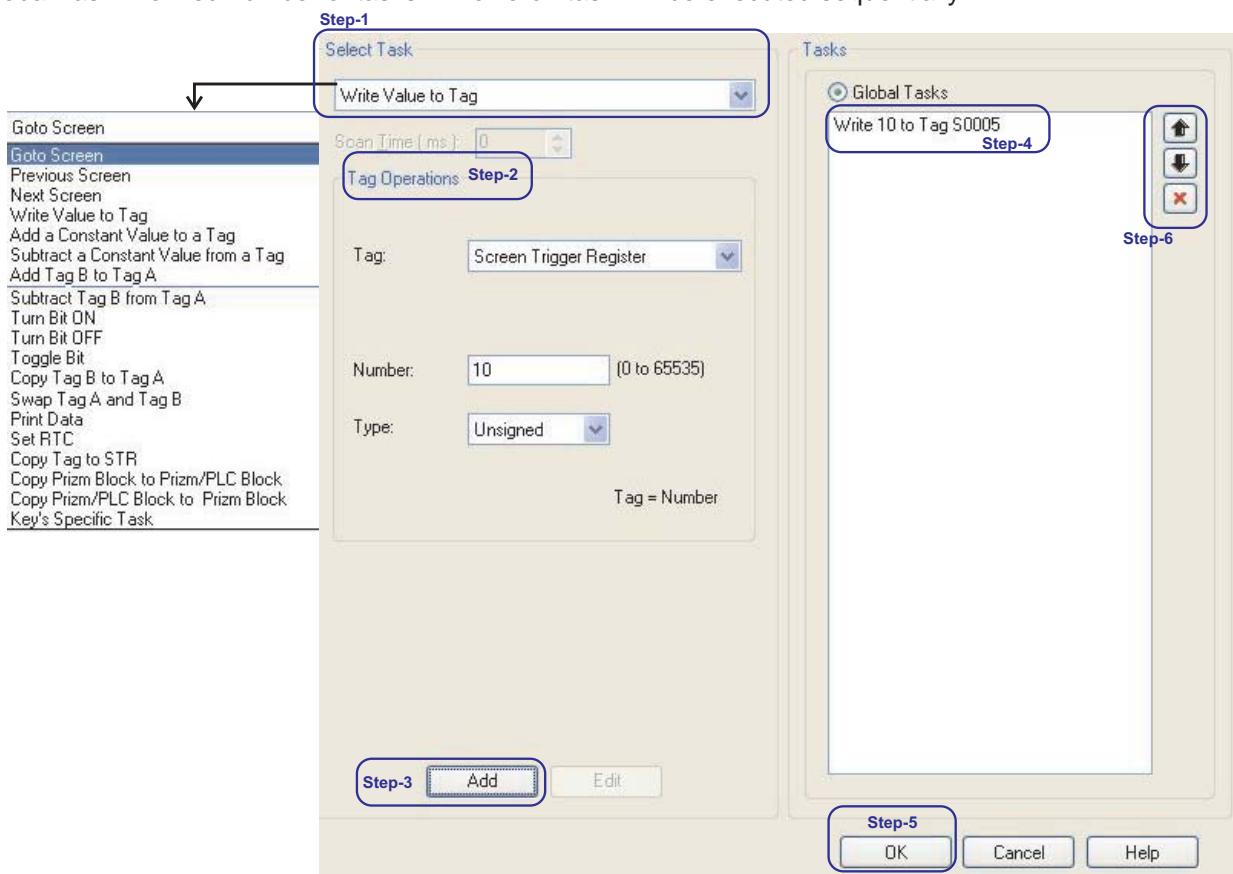
List of task operations that can be performed at the Poweron of the unit is to be selected in this section from the selected task. Figure shows the operation tasks that are supported for Poweron Task. Defined number of tasks in Poweron task will be executed sequentially.



- 1) Select the task which is to be assigned at poweron of the unit.
- 2) Fill the corresponding Screen / Tag operation section
- 3) Click on the ADD button.
- 4) The selected task will be displayed in right hand side section of Tasks-> Power On task
- 5) Press OK.
- 6) Number of Tasks selected in Poweron task, are executed sequentially. So if designer needs to change the sequence of the operation then designer can select the operation whose sequence is to be changed and then press "UP Arrow" or "Down Arrow ". If designer wish to delete the defined task then designer needs to select the task operation and Press "Cancel/Delete" button. Designer needs to press the OK button after final addition/changes to the task operations are being made.

### 6.1.2 Global Task

List of task operations that can be performed at the every instance of the unit in poweron stage are selected in this section from the selected task. Figure shows the operation tasks that are supported to get executed in global Task. Defined number of tasks in Poweron task will be executed sequentially.



- 1) Select the task which is to be executed globally at running condition of the unit.
- 2) Fill the corresponding Screen / Tag operation section
- 3) Click on the ADD button.
- 4) The selected task will be displayed in right hand side section of Tasks-> Power On task
- 5) Press OK.
- 6) Number of Tasks selected in Poweron task, are executed sequentially. So if designer needs to change the sequence of the operation then designer can select the operation whose sequence is to be changed and then press "UP Arrow" or "Down Arrow ". If designer wish to delete the defined task then designer needs to select the task operation and Press "Cancel/Delete" button. Designer needs to press the OK button after final addition/changes to the task operations are being made.

**Key Task:**

The key specific task can be derived either as Screen Specific key task or as global key task. Hence the hardware keys can perform two operations one at if defined for specific screen key and other at if being defined as Global Key task. Preference to the task is given for Screen Specific Keys than to the Global Keys.

E.g:- Application project with 2 Screens defined with Data Reg D000 Embedded on Screen 1 as well as Screen 2.

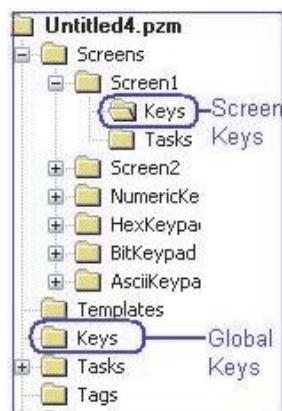
Screen 1 F1 Key :- Defined as Write Value **45** to Tag D000

Screen 2 F1 Key :- Is undefined.

Global F1 Key :- Defined as Write Value **5555** to Tag D000

Now if , Unit displays Screen 1 and user press F1 then Value displayed will be 45 (giving preference to Screen Specific Key) and if unit displays Screen 2 and user press F1 then value displayed is 5555 (as no screen Specific key task defined, hence perform Global key task).

Two types of Key task are : 1) Screen Key Task                    2) Global Key Task.



The tasks related to any of the keys (Screen Key or Global keys) can be operated in 3 ways

**1) Press Task:-** Perform defined operation once at the press of key. The list of task which can be operated at one touch of Key are as shown in Fig.Various list of tasks related to screen or Tag can be defined in this "Press Task". All these tasks in one key press will get executed sequentially, i.e. first task will get executed first and last one at last.

Goto Screen	Add Tag B to Tag A	Print Data
Previous Screen	Subtract Tag B from Tag A	Set RTC
Next Screen	Turn Bit ON	Copy Tag to STR
Write Value to Tag	Turn Bit OFF	Copy HMI Block to HMI/PLC Block
Add a Constant Value to a Tag	Toggle Bit	Copy HMI/PLC Block to HMI Block
Subtract a Constant Value from a Tag	Copy Tag B to Tag A	Key's Specific Task
Add Tag B to Tag A	Swap Tag A and Tag B	USB Data Log Upload
Subtract Tag B from Tag A	Print Data	

**2) Pressed Task:-** Perform defined operation with key being kept pressed continuously.

Various list of tasks related to Tag or group of tags(i.e. Blocks) can be defined in this "Pressed Task". All these tasks will be repetitively getting executed sequentially at key being kept pressed, i.e. first task will get executed first and last one at last.

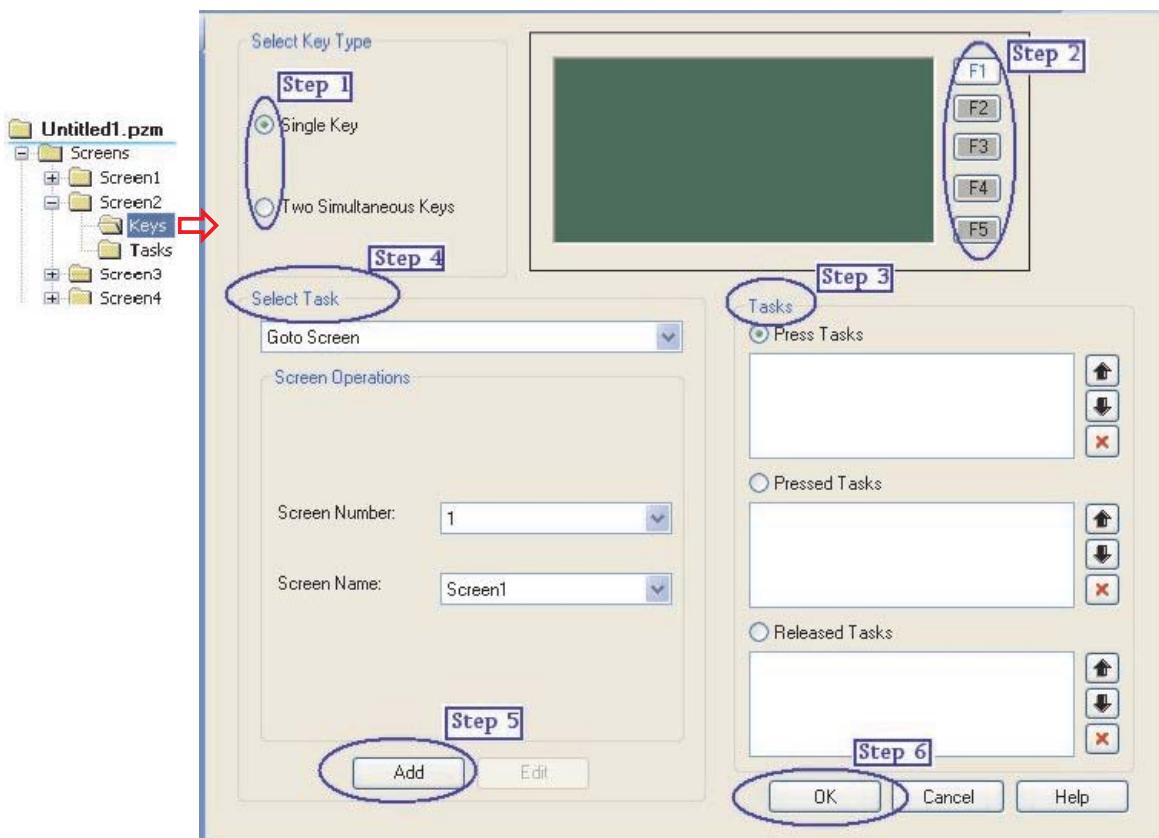
Write Value to Tag
Add a Constant Value to a Tag
Subtract a Constant Value from a Tag
Add Tag B to Tag A
Subtract Tag B from Tag A
Copy Prizm Block to Prizm/PLC Block
Copy Prizm/PLC Block to Prizm Block
Copy Tag B to Tag A
Key's Specific Task

**3) Released Task:-**Perform defined operation once after the release of key.Various list of tasks related to screen,Tag or group of tags (Blocks) can be defined in this "Released Tasks". All these tasks will get executed sequentially at the instant of release of touched key.

Goto Screen	Turn Bit ON	Copy HMI Block to HMI/PLC Block
Previous Screen	Turn Bit OFF	Copy HMI/PLC Block to HMI Block
Next Screen	Toggle Bit	Key's Specific Task
Write Value to Tag	Copy Tag B to Tag A	USB Data Log Upload
Add a Constant Value to a Tag	Swap Tag A and Tag B	
Subtract a Constant Value from a Tag	Print Data	
Add Tag B to Tag A	Set RTC	
Subtract Tag B from Tag A	Copy Tag to STR	

### 6.1.3 Screen Key Task

The key task which are desired to be performed at the display of specific screen are defined as Screen Key task. This can be set through Keys folder being shown in particular Screen folder (i.e. Screen 1 Screen 2 or any user defined screen name).



#### Select Key Type:-

User can perform the key task operation either by selecting the single key press or with Two simultaneous key press.

Single Key:- Any single key can be selected to define the list of operations desired to be performed at different tasks to be executed at its press. The selected key will be highlighted and will display the list of already defined task in specific Task windows but these tasks are specific to particular key defined for particular Screen only. Same key with same/Different task desired to be used at display of different screen, will have to be defined separately.

Two Simultaneous Keys:- Any two simultaneous keys can be defined to execute the defined list of operation in task. User will have to press the defined two keys simultaneously. The tasks defined for two simultaneous keys will be displayed only if proper combination of defined keys are selected. One key can be used/shared in multiple combination of any two two keys ,i.e.

F1 + F2, F1+F3, F1+F5 ....).

Following steps can be used to define any Key Specific task.

Step 1 :- Select the key type (Single key or Two Simultaneous keys).

Step 2 :- Select the Specific key to which the task operation is to be defined.

Step 3 :- Select the task (Press,Pressed or Released), where desired task operation is to be defined.

Step 4 :- Select the task operation either tag related or screen related from the list of operations displayed from flyout to this cell.

Step 5 :- Press Add to get the task operation defined in Desired tasks Cell.

Step 6 :- Press OK to get desired operation task stored permanently in desired Task Cell.

If Ok is not pressed and Designer switch to any other tasks or Screen , then the operation task added by pressing ADD button will not be stored in Tasks Cell.

**Tasks:-** The other way in which list of tasks that can be executed / operated without any pressing of key are defined as Screen Tasks. The tasks which gets executed at the display of particular screen. Screen Tasks can be defined through Application Folder->Particular screen (Say Screen1) ->Tasks Folder as shown in figure.The Task operation defined in tasks folder will get executed only on the display of particular screen on unit



Executing the list of operational task on display of particular screens can be done in three ways:

#### 1) Before showing the Screen:

Task operation defined in this cell gets executed just before showing the selected defined key. The list of task operations supported in this cell are as follows

Goto Screen	Subtract Tag B from Tag A
Previous Screen	Turn Bit ON
Next Screen	Turn Bit OFF
Copy Tag to STR	Toggle Bit
Write Value to Tag	Copy Tag B to Tag A
Add a Constant Value to a Tag	Swap Tag A and Tag B
Subtract a Constant Value from a Tag	Copy Tag to LED
Add Tag B to Tag A	USB Data Log Upload
Subtract Tag B from Tag A	Copy HMI Block to HMI/PLC Block
Turn Bit ON	Copy HMI/PLC Block to HMI Block

#### 2) While showing the screen:

Task operation defined in this cell gets executed while showing (or on display of screen) the selected defined screen. The list of task operations supported in this cell are as follows

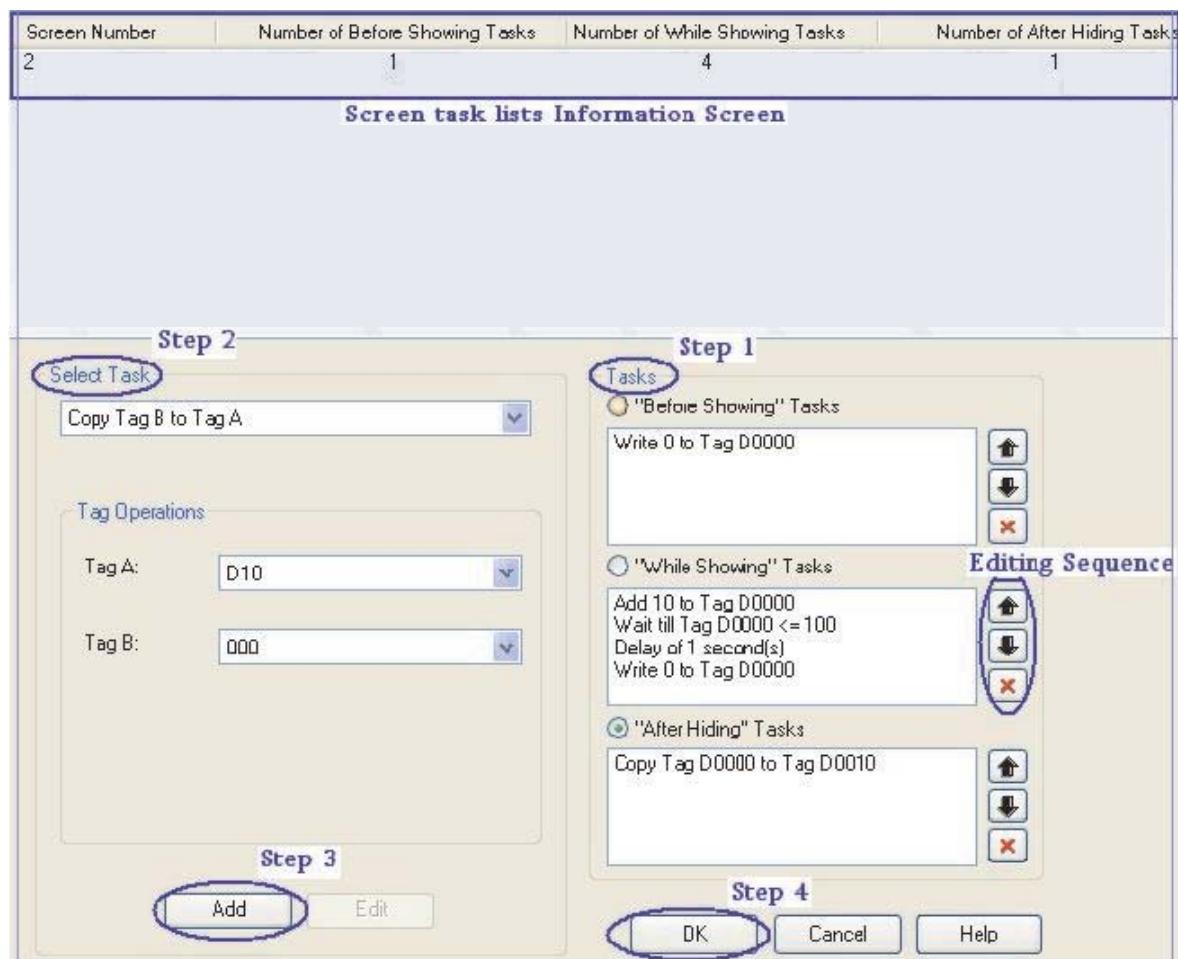
Write Value to Tag	Turn Bit OFF
Add a Constant Value to a Tag	Toggle Bit
Subtract a Constant Value from a Tag	Copy Tag B to Tag A
Add Tag B to Tag A	Swap Tag A and Tag B
Subtract Tag B from Tag A	Wait
Turn Bit ON	Delay
Turn Bit OFF	Copy HMI Block to HMI/PLC Block
Toggle Bit	Copy HMI/PLC Block to HMI Block

#### 3) After hiding the screen:

Task operation defined in this cell gets executed just after the selected defined screen is closed. The list of task operations supported in this cell are as follows

Goto Screen	Subtract Tag B from Tag A
Previous Screen	Turn Bit ON
Next Screen	Turn Bit OFF
Copy Tag to STR	Toggle Bit
Write Value to Tag	Copy Tag B to Tag A
Add a Constant Value to a Tag	Swap Tag A and Tag B
Subtract a Constant Value from a Tag	Copy Tag to LED
Add Tag B to Tag A	USB Data Log Upload
Subtract Tag B from Tag A	Copy HMI Block to HMI/PLC Block

Selecting the tasks folder will display the following screen



Screen Task List Information Screen:- Will display the overall information related to the screen tasks defined for respective screen. First Column defines the screen number which is being selected. Rest 3 columns defines the number of task operations defined in various screen tasks(either or else Before Showing, While showing and After hiding).

Following steps should be followed by Designer to define the task operations desired to be executed in various task of display of screen

Step 1:- Select the Tasks cell in which list of operations are to be defined.

Step 2:- Select the task operation to be performed. Define the particular Tag or screen information in tag or screen operation cell.

Step 3:- Press add button to get added the task operation in desired Tasks Cell

Step 4:- Press OK, to confirm and store the desired task operations added in tasks cell.

Editing Sequence :- The buttons with Up Key, Down Key or Cancel Key. These Up/Down keys are used to change the sequence of list of operation tasks defined in Tasks Cell. Cancel key is used to delete the operation task defined in Tasks cell.

### 6.3 Description of Tasks:-

- 1) Goto Screen:-** The task operation is used to switch from one screen to another. Through this task operation user can switch to any screen from any of the existing screens by defining it in Power on Task, Press Task of Key, Released task of Key, Before showing screen Task, After hiding Screen task.
- 2) Next Screen:-** The task operation is used to switch to next screen from the existing displayed screen. This task operation can be used through Power on Task, Press Task of Key, Released task of Key, Before showing screen Task, After hiding Screen task.
- 3) Previous Screen:-** The task operation is used to switch to previous screen from the existing displayed screen. This task operation can be used through Power on Task, Press Task of Key, Released task of Key, Before showing screen Task, After hiding Screen task.
- 4) Write Value to Tag:-** The task operation is used to write an constant value in internal tag or PLC Tag defined in tag data base. This task operation can be executed through all Tasks, Tasks (Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).
- 5) Add a constant Value to a Tag:-** The task operation is used to add a constant value continuously in internal tag or PLC Tag defined in tag data base. This task operation can be executed through all Tasks, Tasks (Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen). The constant value number range selection limits, depends upon the bytes defined for the selected Tag defined in Tag Data base. If tag is 2 byte then number range will be 0-65535 and if Tag is 4 byte then number range will be 0-4294967295.
- 6) Subtract a constant Value to a Tag:-** The task operation is used to subtract a constant value continuously from internal tag or PLC Tag defined in tag data base. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen). The constant value number range selection limits, depends upon the bytes defined for the selected Tag defined in Tag Data base. If tag is 2 byte then number range will be 0-65535 and if Tag is 4 byte then number range will be 0-4294967295.
- 7) Add Tag B to Tag A:-** The task operation is used to add a value from particular tag to a value of another tag. Value of tag which is to be added is to be defined as Tag B, and the value of tag in which it is to be added is to be defined as Tag A , the result of adding both tag is stored in Tag A. So mathematical operation formed through this task operation is Tag A=Tag A+Tag B. These A or B tag can be either Internal tag or PLC tags defined in Tag Database. This task operation can be executed through all Tasks, Tasks (Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).
- 8) Subtract Tag B from Tag A:-** The task operation is used to subtract a value of particular tag from a value of another tag. Value of tag which is to be substracted is to be defined as Tag B, and the value of tag from which it is to be substracted is to be defined as Tag A, the result of substracting values from tag is stored in Tag A. So mathematical operation formed through this task operation is Tag A=Tag A-Tag B. These A or B tag can be either Internal tag or PLC tags defined in Tag Database. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).
- 9) Turn Bit ON:-** The task operation is used to Turn On the bit from its previous off state. This task can be executed only on the Bit type/Coil type tag. The tag can be either Internal tag or PLC tag. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).
- 10) Turn Bit OFF:-** The task operation is used to Turn Off the bit from its previous on state. This task can be executed only on the Bit type/Coil type tag. The tag can be either Internal tag or PLC tag. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hidding Screen).

**11) Toggle Bit :-** The task operation is used to change the state of bit from its previous state. This task operation toggles the earlier state. E.g if Bit/Coil is in Off State then this Task operation will turn it on or vice versa. This task can be executed only on the Bit type/Coil type tag. The tag can be either Internal tag or PLC tag. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).

**12) Copy Tag B to Tag A:-** The task operation is used to copy a value from particular tag to an another tag. Value of tag which is to be copied is to be defined as Tag B, and the tag in which it is to be copied is to be defined as Tag A, the result of copying is stored in Tag A. These A or B tag can be either Internal tag or PLC tags defined in Tag Database. This task operation can be executed through all Tasks, Tasks (Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).

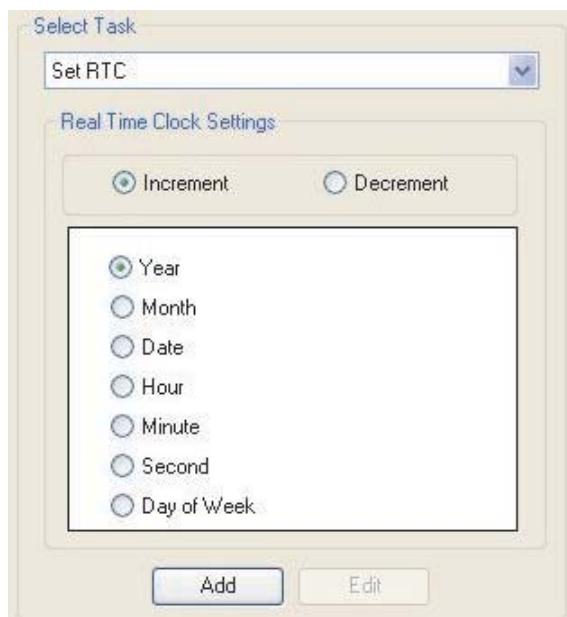
**13) Swap Tag A to Tag B:-** The task operation is used to interchange the values from two tags. Through this task operation "Swap Tag B to Tag A", the value from Tag A and Tag B gets interchanged, i.e Value in Tag A is displayed in Tag B and Value from Tag B is displayed in Tag A. These A or B tag can be either Internal tag or PLC tags defined in Tag Database. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).

**14) Copy FP Block to FP/PLC Block:-** The task operation is used to copy the values of Consecutive set of unit (Internal) tags to consecutive set of unit (Internal)/ PLC Tag. This task operation is useful to copy number of Blocks at a time instead of copying each tag one by one. Through this task operation either Internal tags can be copied to Internal Tags or in to PLC Tags. The internal tags start address to be mentioned is Tag B and Internal Tag / PLC tags whose start address is Tag A. No of blocks which needs to be get copied at a time is to be defined in "No of Tag Cells". Therefore the Tag A Can be internal or PLC Tag and Tag B can be only Internal Tag. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).

**15) Copy FP/PLC Block to FP Block:-** The task operation is used to copy the values of consecutive set of unit (Internal)/ PLC tags to consecutive set of unit (Internal) Tag. This task operation is useful to copy number of Blocks at a time instead of copying each tag one by one. Through this task operation either Internal tags can be copied to Internal Tags or PLC tag can be copied to unit (Internal) Tags. The internal tags start address to be mentioned is Tag A and Internal Tag / PLC tags whose start address is Tag B. No of blocks which needs to be get copied at a time is to be defined in "No of Tag Cells". There fore the Tag A Can be internal or PLC Tag and Tag B can be only Internal Tag. This task operation can be executed through all Tasks, Tasks(Poweron and Global), Key Tasks with local keys or global keys with (Press/Pressed/Released) and through screen tasks (Before Showing, While Showing and After hiding Screen).

**16) Print Data:-** This task operation is used to print the alphanumeric data displayed on current unit screen. To execute this task operation user needs to define the port as Serial Printer. This task operation can be executed through Key tasks only. Either through Press Key Task or Released Key Task.

**17) SET RTC:-** This task operation is used to set the Real Time Clock of the Unit. This task operation can be performed through Key task at Key Press or Key release. Designer will need to define whether to Increment / decrement the Date or time parameters. These parameters gets incremented / decremented by 1. RTC counts all parameters with reference to Leap year compensation. Designer needs to click Add as Well as OK, so as to define the Key task to particular key.



**19) Key Specific Task:-** This task operation can be performed through Key Task only. i.e either at Key press, Key Pressed or Key released. These tasks can be defined to either Global Keys or Function keys. The list of key specific task is as shown in following figure. Key Specific task operations from following list gets enabled or Disabled depending upon the Key task selected.

<input checked="" type="radio"/> Clear Data Entry	<input type="radio"/> Numeric Key D
<input type="radio"/> Cancel Data Entry	<input type="radio"/> Numeric Key E
<input type="radio"/> Accept Data Entry	<input type="radio"/> Numeric Key F
<input type="radio"/> Switch to Next Data Entry	<input type="radio"/> Edit Bit On
<input type="radio"/> Increase Value by 1	<input type="radio"/> Edit Bit Off
<input type="radio"/> Decrease Value by 1	<input type="radio"/> Acknowledge Alarm
<input type="radio"/> Increase Digit by 1	<input type="radio"/> Acknowledge All Alarms
<input type="radio"/> Decrease Digit by 1	<input type="radio"/> Previous Alarm
<input type="radio"/> Shift Value To Left	<input type="radio"/> Next Alarm
<input type="radio"/> Move Cursor to Left	<input type="radio"/> Previous Historical Alarm
<input type="radio"/> Move Cursor to Right	<input type="radio"/> Next Historical Alarm
<input type="radio"/> Sign Key (+/-)	<input type="radio"/> Refresh All Trends
<input type="radio"/> Sign Key (+/-) and 0	<input type="radio"/> Start Logger for All Groups
<input type="radio"/> Numeric Key 0	<input type="radio"/> Stop Logger for All Groups
<input type="radio"/> Numeric Key 1	<input type="radio"/> Start Logger of Group <input type="text" value="1"/>
<input type="radio"/> Numeric Key 2	<input type="radio"/> Stop Logger of Group <input type="text" value="1"/>
<input type="radio"/> Numeric Key 3	<input type="radio"/> Clear Log Memory
<input type="radio"/> Numeric Key 4	<input type="radio"/> Move to Latest Historical Alarm
<input type="radio"/> Numeric Key 5	<input type="radio"/> Move to Oldest Historical Alarm
<input type="radio"/> Numeric Key 6	<input type="radio"/> Move to Latest Alarm
<input type="radio"/> Numeric Key 7	<input type="radio"/> Move to Oldest Alarm
<input type="radio"/> Numeric Key 8	<input type="radio"/> Start Printing of Group <input type="text" value="1"/>
<input type="radio"/> Numeric Key 9	<input type="radio"/> Stop Printing of Group <input type="text" value="1"/>
<input type="radio"/> Numeric Key A	Port <input type="text" value="1"/>
<input type="radio"/> Numeric Key B	<input type="radio"/> Clear Historical Alarm Memory
<input type="radio"/> Numeric Key C	

<b>1. Clear Data Entry:</b>	This task clears active data entry value to Zero.
<b>2. Cancel Data Entry:</b>	This task disable data entry.
<b>3. Accept Data Entry:</b>	Accepts edited data for current data entry and cursor jumps to next data entry object.
<b>4. Switch to Next Data Entry:</b>	Disables previous data entry object and switch to next Data entry object.
<b>5. Increase value by 1:</b>	Adds 1 to Tag value in data entry object.
<b>6. Decrease value by 1:</b>	Substracts 1 to Tag value in data entry object.
<b>7. Increase Digit by 1:</b>	This task is executed only on a single digit shown by cursor. The digit scrolls between 0 to 9.
<b>8. Decrease Digit by 1:</b>	This task is executed only on single digit shown by cursor. The digit scrolls between 0 to 9.
<b>9. Shift Value to Left:</b>	This task shifts value to left by adding 0's from right side.
<b>10. Move Cursor to Left:</b>	This task moves cursor to left . This task is not scrolling type so cursor moves up to no. of digits in the data entry object.
<b>11. Move Cursor to Right:</b>	This task moves cursor to right . This task is not scrolling type so cursor moves up to no of digits in the data entry object.
<b>12. Sign Key(+/-):</b>	This task operates only on Signed data. On each event sign toggles between + and -.
<b>13. Sign Key(+/-) and 0:</b>	For first iteration this task acts as Sign key. Then for each following iteration, it acts as Numeric Key 0.
<b>14. Numeric Key 0:</b>	This task allows user to enter '0' at cursor location, if selected tag is register type. For coil/ bit type, this task acts as 'Edit Bit Off'.
<b>15. Numeric Key 1:</b>	This task allows user to enter '1' at cursor location, if selected tag is register type. For coil/ bit type, this task acts as 'Edit Bit On'.
<b>16. Numeric Key 2:</b>	This task allows user to enter '2' at cursor location.
<b>17. Numeric Key 3:</b>	This task allows user to enter '3' at cursor location.
<b>18. Numeric Key 4:</b>	This task allows user to enter '4' at cursor location.
<b>19. Numeric Key 5:</b>	This task allows user to enter '5' at cursor location.
<b>20. Numeric Key 6:</b>	This task allows user to enter '6' at cursor location.
<b>21. Numeric Key 7:</b>	This task allows user to enter '7' at cursor location.
<b>22. Numeric Key 8:</b>	This task allows user to enter '8' at cursor location.
<b>23. Numeric Key 9:</b>	This task allows user to enter '9' at cursor location.
<b>24. Numeric Key A:</b>	This task allows user to enter 'A' at cursor location.
<b>25. Numeric Key B:</b>	This task allows user to enter 'B' at cursor location.
<b>26. Numeric Key C:</b>	This task allows user to enter 'C' at cursor location.
<b>27. Numeric Key D:</b>	This task allows user to enter 'D' at cursor location.
<b>28. Numeric Key E:</b>	This task allows user to enter 'E' at cursor location.
<b>29. Numeric Key F:</b>	This task allows user to enter 'F' at cursor location.
<i>Note Numeric keys A to F are applicable for HEX data entry only.</i>	
<b>30. Edit Bit On:</b>	This task operates only on coil/ bit tags. coil/bit is set to 1 from this task.
<b>31. Edit Bit Off:</b>	This task operates only on coil/ bit tags. coil/bit is set to 0 from this task.
<b>32. Acknowledge Alarm:</b>	This task will acknowledge the first alarm (in top position in the real time alarm window).
<b>33. Acknowledge all Alarm:</b>	Unlike the Acknowledge Alarm task this task will acknowledge all active alarms.
<b>34. Previous Alarm:</b>	The alarm display position in the real time alarm container is shifted one position up.
<b>35. Next Alarm:</b>	The alarm display position in the real time alarm container is shifted one position down.
<b>36. Previous Historical Alarm:</b>	The alarm display position in the historical alarm container is shifted one position up.
<b>37. Next Historical Alarm:</b>	The alarm display position in the historical alarm container is shifted one position down.
<b>38. Refresh all Trend:</b>	It refreshes the historical trend for the new values.
<b>39. Start Logger for all groups:</b>	Start the data logger for all the four groups.
<b>40. Stop Logger for all groups:</b>	Stop the data logger for all the four groups.
<b>41. Start Logger of groups:</b>	Start the data logger for the specific groups (in the range of 1 to 4 groups)
<b>42. Stop Logger of groups:</b>	Stop the data logger for the specific groups (in the range of 1 to 4 groups)

**43. Clear Log Memory:** Clear data logger memory.

The time require to erase the flash is:

Flash Size (KB) Approx.	Time to Erase (Seconds)
256	2
512	4
1024	8
2048	16

**44. Clear Historical Alarm Memory:**

Clear all displayed historical alarm from memory.

**44. Move to Latest Historical Alarm:**

Alarm display window will show the latest historical Alarm page.

**45. Move to Oldest Historical Alarm:**

Alarm display window will show the oldest historical Alarm page.

**46. Move to Latest Alarm:**

Alarm display window will show the latest real Alarm page.

**47. Move to Oldest Alarm:**

Alarm display window will show the oldest real Alarm page.

**48. Start Printing of Group:**

To start printing the desired value and information of logged data tag . This section is enabled only if Tag to be printed is defined in Print properties of Data Logger section.

**49. Stop Printing of Group:**

To stop printing the desired value and information of logged data tag. This section is enabled only if Tag to be printed is defined in Print properties of Data Logger section.

**50. Clear Historical Alarm Memory:**

Clear all displayed historical alarm from memory.

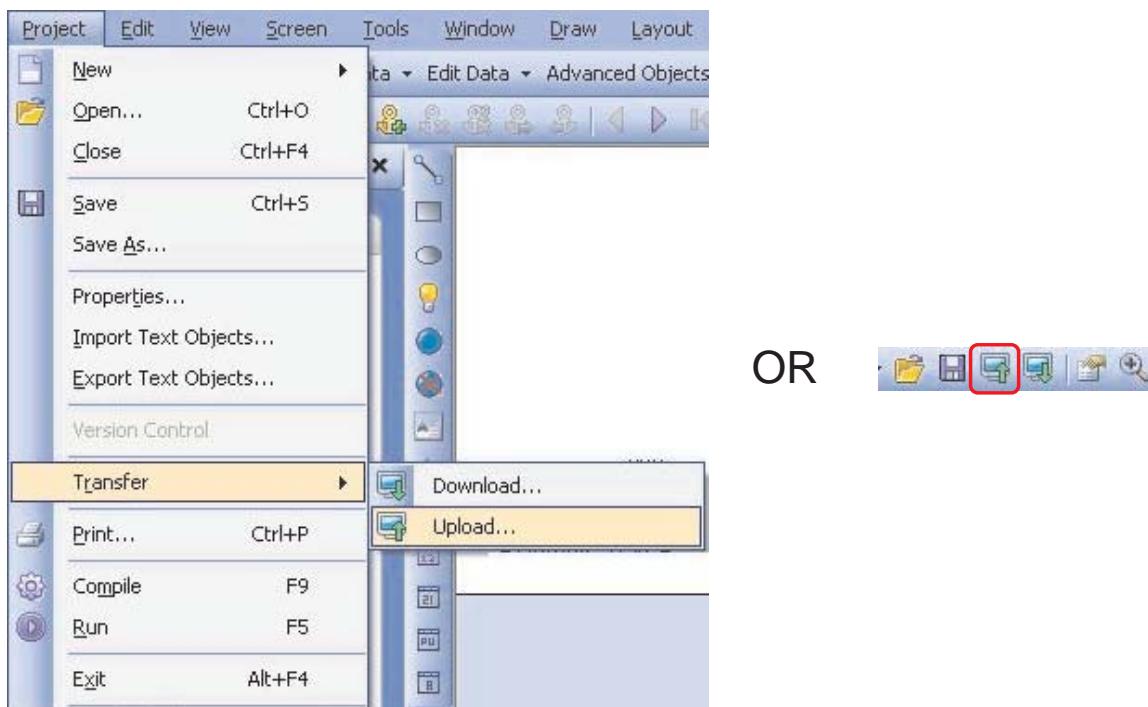
## **DOWNLOADING AND UPLOADING FROM UNIT**

In this chapter. . . .

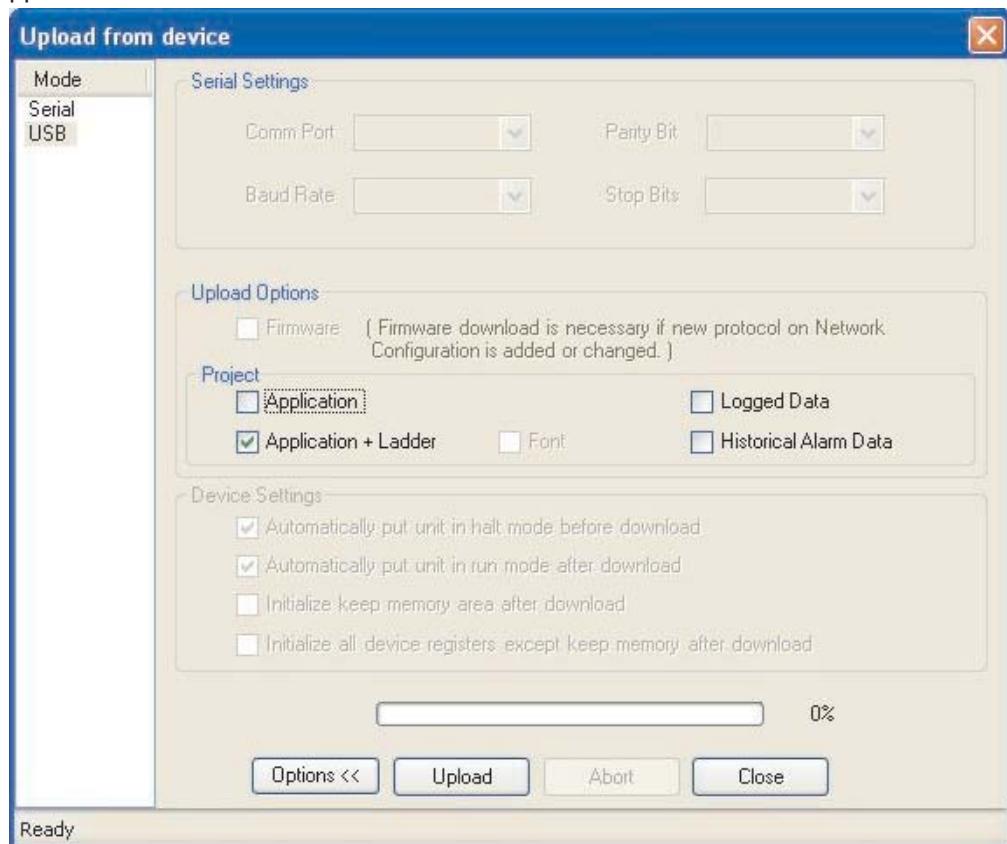
- \* Upload an application
- \* Download an application
- \* Device Information

## 7.1 Upload an application

An application can be uploaded from the ARGOS FP unit. To upload an application first select the appropriate communication port (serial or USB) for your computer by choosing “Communication | Comm Port” menu option. To reach this “Communication” docker window; choose “Project | Transfer | Upload”. Attach a computer to unit cable. From the “Communication” menu, click on the “Upload...” selection.



In the Upload dialog, check the “Application” radio button and press the “Upload” button to begin uploading the application.



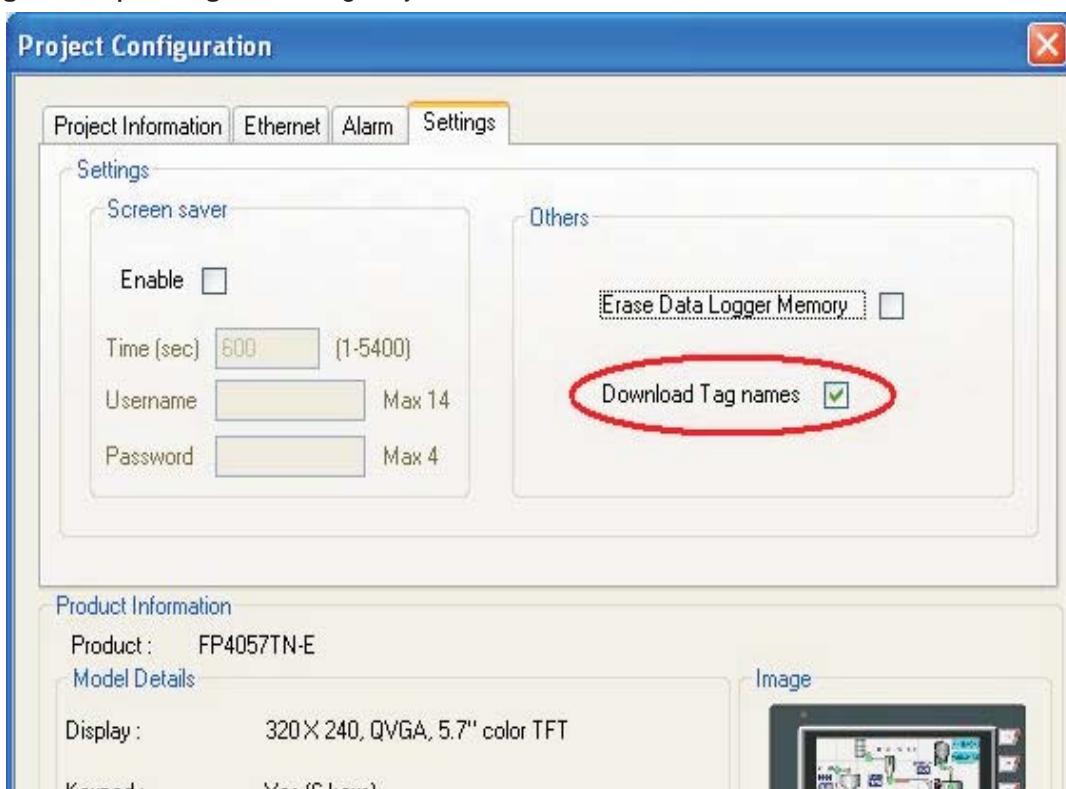
The user has to define which communication port to use for uploading / downloading.

In uploading, the application and the application plus logged data uploads can be performed.

### 1. Application

If this option is selected, only the application will be uploaded from the unit.

Note that tag and screen names can be uploaded only if the “Download tag names” option in “Project Configuration | Settings” was originally selected as shown below:

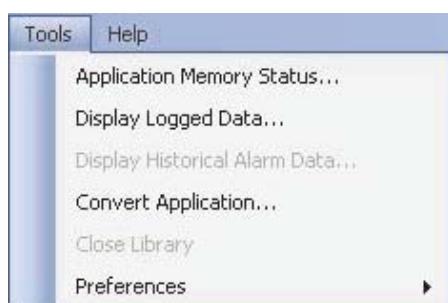


If this option was not selected, then the tag names and screen names are uploaded with default names such as Tag1, Tag2 and Tag3. If the application used ladder logic block tasks, they cannot be uploaded. Ladder block information would only be available from the original application file.

### 2. Application + Logged data

This option is selected if user wants to upload application and logger data. The application is uploaded first and then the logger data.

The logged data is displayed in a csv format. The data can be viewed by selecting the “Display Logged Data” menu option located under “Tools” as shown below:



The following errors may occur during uploading:

#### 1 Device not responding

This error indicates that no communication has been established between the computer and the FP unit. The probabilities for this situations will be:

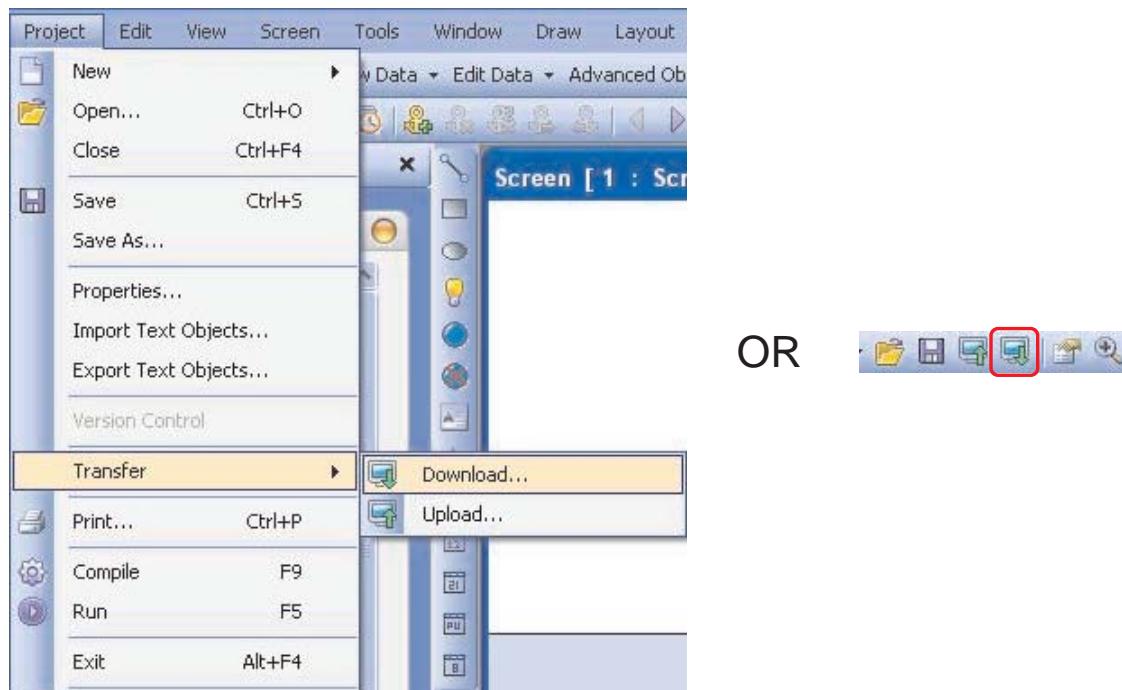
- (i) Unit is not connected to PC.
- (ii) Unit is not connected to selected port (Serial & USB)
- (iii) Selected port is not working
- (iv) Unit power is off.
- (v) Connecting cable (Serial &/or USB is not working)

**2 Port is either busy or not exist**

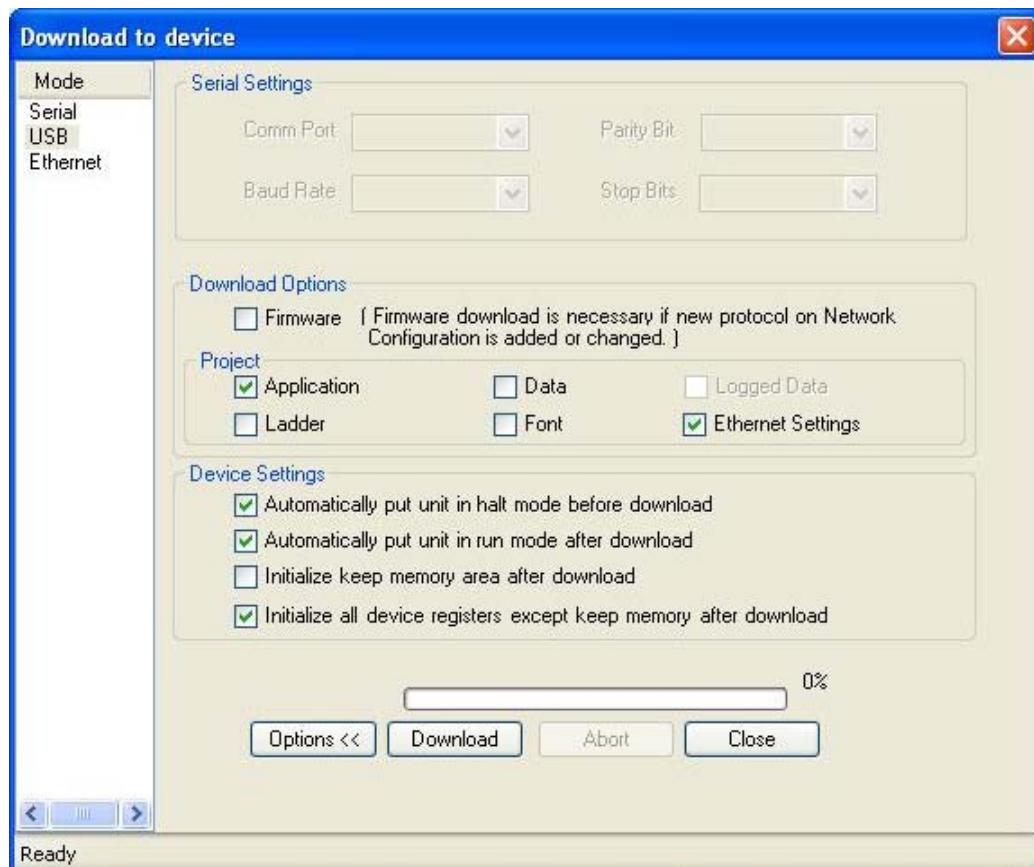
This error occurs if you try to upload in unit while serial port is busy.

## 7.2 Download

To download an application into the unit, either click on “**Download**” button from the Toolstation or choose “**Project | Tranfer**” menu option as shown below:



After linking, the following window will display:



**Comm Port** – Used to select which communication port to use for downloading. By default Com1 is selected.

Any changes are stored with the FP program.

#### Download Options

##### 1. Application

Select this option to download the application to the unit.

##### 2. Firmware

Firmware needs to be downloaded when:

1. Before downloading the application for the first time.
2. If a new PLC node is either added or deleted in the Network configuration.
3. Upgrading firmware in the unit to newer version.
4. Before downloading applications created in older versions of software.

##### 3. Font

Select this option to download fonts to unit. This option needs to be selected if the default fonts have been modified.

##### 4. Ladder

Select this option to download ladder blocks to the unit. This option needs to be selected if the ladder logic blocks have been modified.

In the “Device Settings” section, user can see disabled options as:

(i) Initialize keep memory area after download:

This is option provided for user to initialize the Keep Memory Area to default values (Zero) after download, If this option is not selected, the values in this Memory Area will be retained after Download of Program (Firmware / Application / Ladder)

(ii) Initialize all device registers except keep memory after download:

This is option provided for user to initialize the Device Registers (Like D,BW,YW ) of HMI except Keep Memory Area (system Parameters) to default Values (Zero), If this option is not selected, the values in this Memory Area will be retained after Download of Program (Firmware / Application / Ladder).

(iii) Initialize keep memory area after download:

If user enables this option, it will clear the keep memory area defined in system parameters, unless it will be kept retentive.

(iv) Initialize all device register except keep memory area after download:

This option is provided to clear all memory area except data from “Keep Memory Area”

*Note:*

*At Power Cycle Only the User specified Keep memory Area is retained and other device Registers are initialized to Zero. Download options are applicable only at the time of Download of Program.*

**Download Button** - Click this button to start the downloading.

**Abort Button** - Click on this button to stop the downloading.

The following errors may occur during Downloading:

#### 1 Product mismatch

This error occurs if you, prepare an application for FP5 & download it to FP3.

#### 2 Port is either busy or not exist

This error occurs if you try to upload in unit while serial port is busy.

#### 3. Device not responding

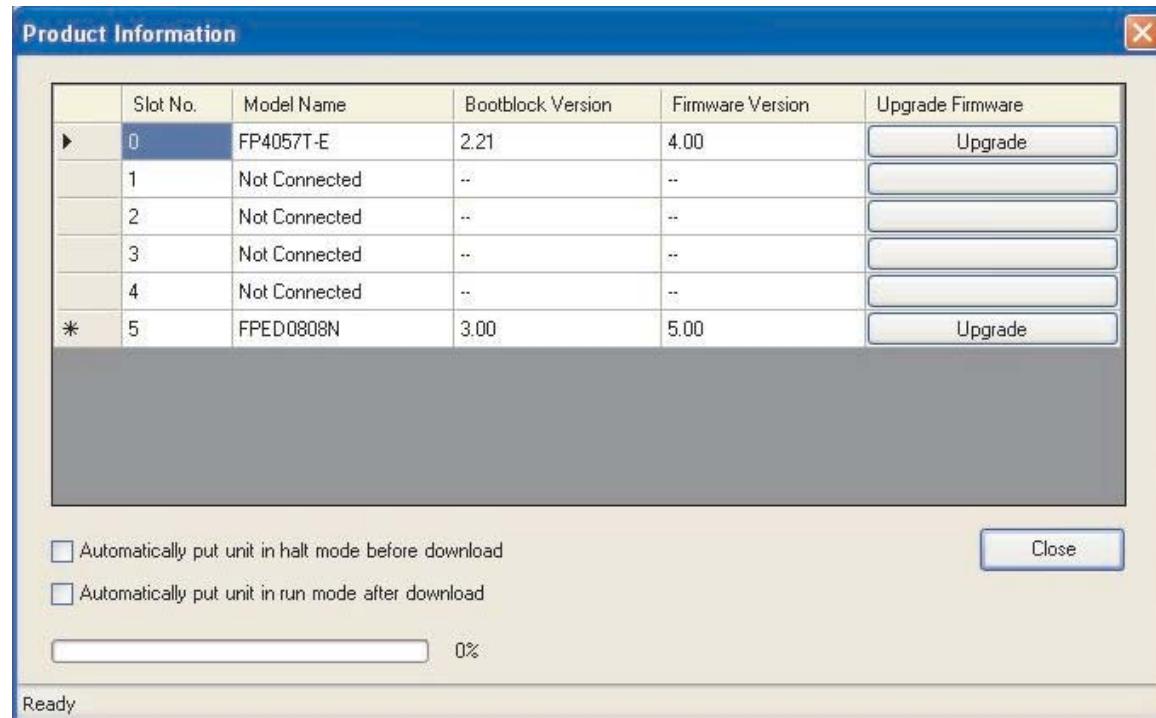
This error indicates that no communication has been established between the computer and the unit. The probabilities for this situations will be:

- (i) Unit is not connected to PC.
- (ii) Unit is not connected to selected port (Serial & USB)
- (iii) Selected port is not working
- (iv) Unit power is off.
- (v) Connecting cable (Serial &/or USB is not working)

### 7.3 Device Information

Device information is used to detect the information such as model name, bootblock / hardware / firmware version of base and expansion models as well as user can upgrade firmware of expansion modules.

User can select device information from menu View -> Device Information:



Expansion Firmware Upgrade Scheme:

If the firmware version present in connected expansion module is lower as compared to the one present in latest FlexiSoft Build, the user if required can upgrade the firmware version of the connected expansion module.

Steps to upgrade the Expansion Module Firmware:

- Step 1: Click View -> Device Information.
- Step 2: On the expansion module you need to upgrade, click on respective Upgrade button. (Upgrade is only applicable to Expansion Modules by this utility, to upgrade the base firmware use download button).
- Step 3: Select proper download mode i.e. automatically put unit in HALT mode before download, so that download can be done successfully.
- Step 4: If Automatically put unit in run mode after download is ticked, than the unit will be in RUN mode when unit gets soft-restart after expansion download is completed and if it is not enabled, the unit will be in HALT mode after download is completed.
- Step 5: Download is possible only when the expansion firmware in modules is of lower version as compared to expansion firmware version present in FlexiSoft.
- Step 6: After successful download the device information needs to be reopened again to view updated information.

Note:

*Once the firmware of expansion is upgraded the older version cannot be installed.  
Device Information and Expansion firmware upgrade is applicable on USB port only.*

*User can not find the Device information through the view menu if USB cable not connected to the unit.*

## **ALARMS**

In this chapter. . . .

- \* Defining Alarms
- \* Using the Alarm Window
- \* Difference between Real Time & Historical Alarms

## 8.1 Define Alarms

Alarm will be displayed in the alarm window only if it is defined from the 'Define Alarm' menu.

There are two categories of alarm

1. **Real time alarms:** Stored & displayed as long as unit power is ON.
2. **Historical alarms:** Stores alarms in memory with battery back up.

**Note:** Historical alarms are only supported for the units with RTC / Battery backup.

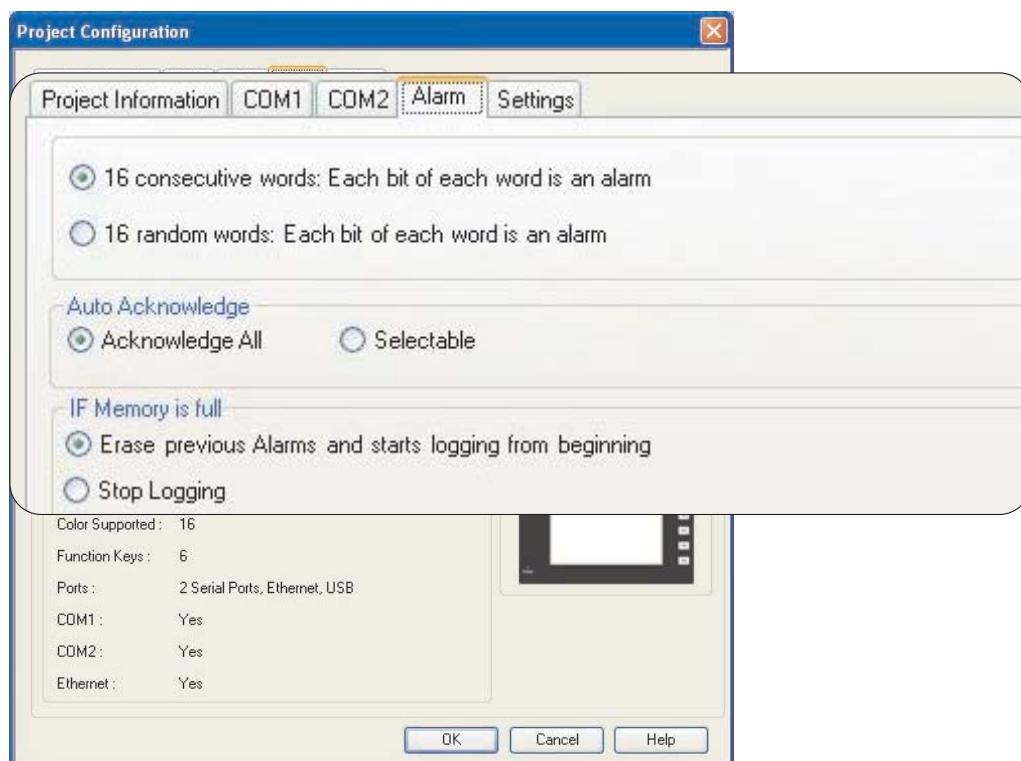
In case of historical alarms the alarms defined with "Historical attribute" are logged till the unit is ON. Then even though you turn the unit OFF & then back ON after few days you can still view the alarms that were present when the unit was ON earlier.

The alarm object displays the alarm text when the alarm occurs. First triggered alarm is on top. Alarm condition for alarm should be cleared. Each alarm has to be acknowledged. 'Acknowledge Alarm' key acknowledges the alarm. The alarm text is cleared when the alarm condition is cleared and the alarm is acknowledged. Alarm text for unacknowledged or uncleared alarm will not be cleared. Any tag can be continuously monitored by defining alarms for each bit of that tag. To display an alarm on the screen as soon as it is triggered, alarm object has to be placed on the screen. An alarm is triggered for each bit in a tag. If the value of the particular tag becomes nonzero, corresponding alarm is displayed in the alarm object.

An alarm is a bit in a particular 2-byte tag. This two-byte tag is defined as a particular group in the alarm definition table. Since a two-byte tag contains 16 bits one such tag can generate 16 alarms. So to define 64 alarms we need to create 4 groups with 4 different two byte tags & define one alarm per bit in that. In total you can define up to 256 real time and can store 6000 historical alarms.

## 8.2 Alarm at Project Configuration

At project configuration; when you select "Alarm" tab, below shown window is seen:



Step-1: We can define alarms for following 3 different types:

- 16 consecutive words: Each bit of each word is an alarm
- 16 random words: Each bit of each word is an alarm

In first 2 options, you can define 16 alarms on each bit of the 2 byte tag. In third option, alarm can be defined on the tag value, it could be either *discrete tag* or *word tag*.

**16 consecutive words: Each bit of each word is an alarm:** (Default)

For this user must add either system / PLC, 16 consecutive tags (Data registers - 2 byte) to the tag database.

Note: Alarm are created under this option is more faster than other 2 options. Because in the case of PLC tags, all 16 tags value get access in a single command. But in following options that could become slow because of sending commands in the random way.

At the runtime, when the bit becomes high, particular alarm will get activated.

**16 random words: Each bit of each word is an alarm:**

There must be 2 byte tag present in the tag database.

**256 Discrete Alarms: Each alarm is either a bit alarm (on / off) or a word alarm:**

This is alarm can be defined for bit tag or word type tag. This is conditional alarm. Alarm tag can be compared with another tag OR constant value. At runtime when the condition get satisfied then only alarm get activated.

Step-2: Auto Acknowledge Option

You can select this option when alarm get activated and user acknowledge it. This is Bit/Coil tag. Purpose is to handle the alarm in the mutual way. It means system generates alarm and user acknowledge it. In this system user can acknowledge all alarms at once or acknowledge each alarm differently.

Right now alarms can be acknowledge through tag only. User has to write value to the Acknowledge Tag. The tag list is provided at the Alarm definition level.



**Acknowledge All:** Define tag which is used for acknowledge to all alarms at once. This is default option.

**Selectable:** On each created alarm, user can assigned acknowledge tag. This is an optional for each alarm.

Step-3: When Buffer is Full:

This is applicable only for historical alarm memory in the unit. It allows to store 600 alarms in the memory.



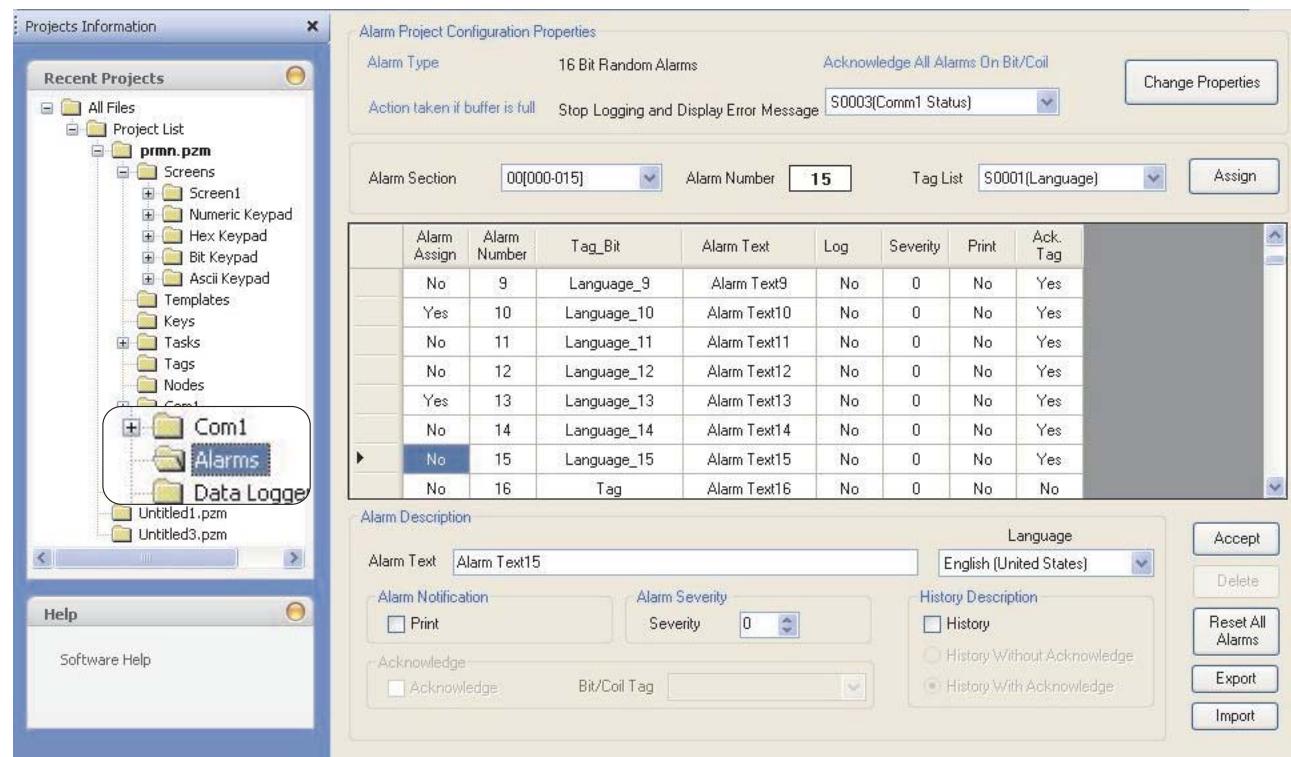
**FIFO:** This option will continue to erase logged historical alarms, when specified memory limit will be filled. It will overwrite the old data. This option doesn't wait for commands from the user nor to define the button "Clear Historical Alarms".

**Stop Logging:** In this case, if allocated space gets full, then it stops logging the records. For clearing all records from memory, you must define "Clear Historical Alarm" button.

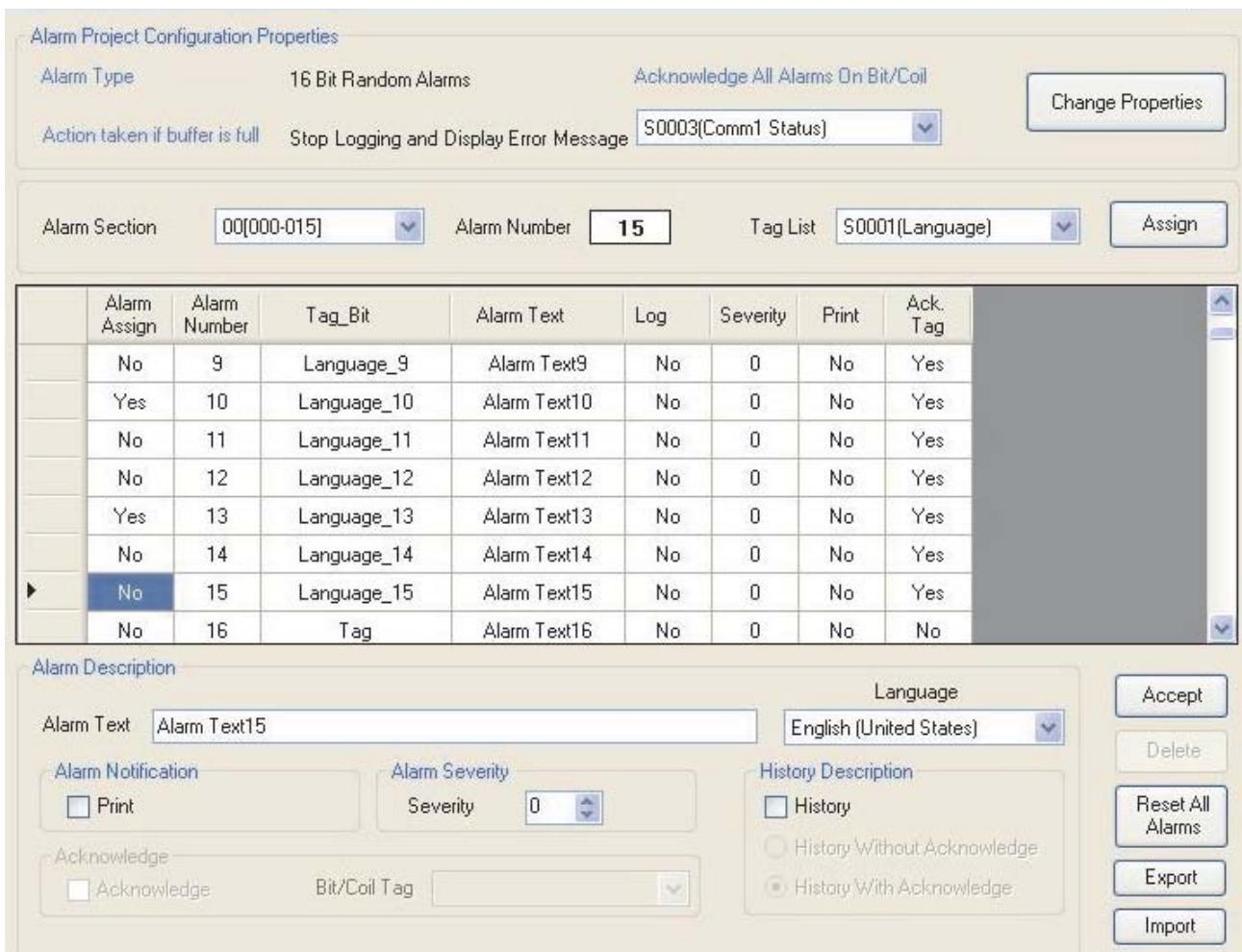
**Stop Logging\_Display error message:** In this case, if allocated space gets full, then it stops logging the records & display error message that you set.

### 8.3 Alarm Definition

In the project Information window, when you select “Alarm”; below shown window will appear:



Alarm Type:



**Change Properties-**

This allows to change the project configuration properties for Alarms. Right now before going to the main dialog, it asks for confirmation whether to delete the current alarms or not. If yes then delete current alarms and allow to change the options.

Properties of alarms are as:

**16-Consecutive Words Alarms :**

Alarm type set to Consecutive alarms. The selected tag shown as a **First word**. Alarm number field shows the selected alarm in the list. **Tag\_Bit** column shows that the bit of selected tag.

Alarm Type	16 Bit Consecutive Alarms	Acknowledge All Alarms On Bit/Coil	<input type="button" value="Change P"/>
Action taken if buffer is full	Stop Logging and Display Error Message		
First Word		Alarm Number	3
		Tag List	

**16-Random words Alarms:**

Each selected tag act as a Alarm Section / Word. Total 16 number of sections are defined and for each, user can define 16 alarms on each bit. Used same tag is not allowed for another section/word. According to the selected section, the alarm focus will be set to the particular alarm in the list or vice versa.

Alarm Type	16 Bit Random Alarms	Acknowledge All Alarms On Bit/Coil	<input type="button" value="Change F"/>
Action taken if buffer is full	Stop Logging and Display Error Message		
Alarm Section	01[016-031]	Alarm Number	16
		Tag List	S0001[Language]

**Discrete Alarms (Conditional Alarms):**

Alarms defined on the basis of conditions. The selected tag can be compared with either constant value or with Tag value. Constant value is limited to 65535. Comparison operators are <, >, <=, >=, == and !=. One more column is added to the data grid list view. i.e. **Alarm Condition**.

Alarm Type	256 Discrete Alarms	Acknowledge All Alarms On Bit/Coil	<input type="button" value="Change F"/>
Action taken if buffer is full	Stop Logging and Display Error Message		
Alarm Number	0	Tag List	S0001[Language]
		<input type="radio"/> Tag <input checked="" type="radio"/> Constant value	

**Assign:**

This button is always used to assign the selected tag to the alarms. In the Consecutive case, the tag list shows the first word of the alarm and after assigning, it starts from first word to the last 16th word.

For example, If user added D0 data register and also Auto add the 16 number of tags; this will be created 16 consecutive tags of 2 bytes from D0000 to D0016. This is done to create the 256 (**16 bits of each word X 16 words** i.e. maximum possible number of alarms) alarms and each bit of each word (D0\_0, D0\_1, D0\_2,..., D0\_15, D1\_0, ..., D1\_15,.....,D16\_15) is defined as a alarm.

For Consecutive alarms, Assign button allows to assign the selected tag as a first word to the 256 alarms.

For 16-Random Words, tags assigned to the selected section of 16 bit word. Same Tag can not be assigned to the other sections.

In the Discrete Alarm, it assigns tag to the particular selected alarm. Same tag can be assigned to more than one alarms.

**Accept:**

This button enables after **assigning the tags** to the alarms (that could be seen in the data-grid view list) and **Alarm Assign column is No.** Before that, user should confirm about the following properties: Alarm Text, Selected Multi-language, Print, Alarm Severity, History (If selected then Check the Acknowledge box and select the acknowledge tag from list). After Accept, alarm is created and Alarm Assign column shows Yes.

**Update:**

The accept button changes to update button when if already alarm is created. This updates all properties to the selected alarms.

**Delete:**

This button delete the selected alarm and reset all the column values in the list view. Before performing this operation, it asks confirmation from the user.

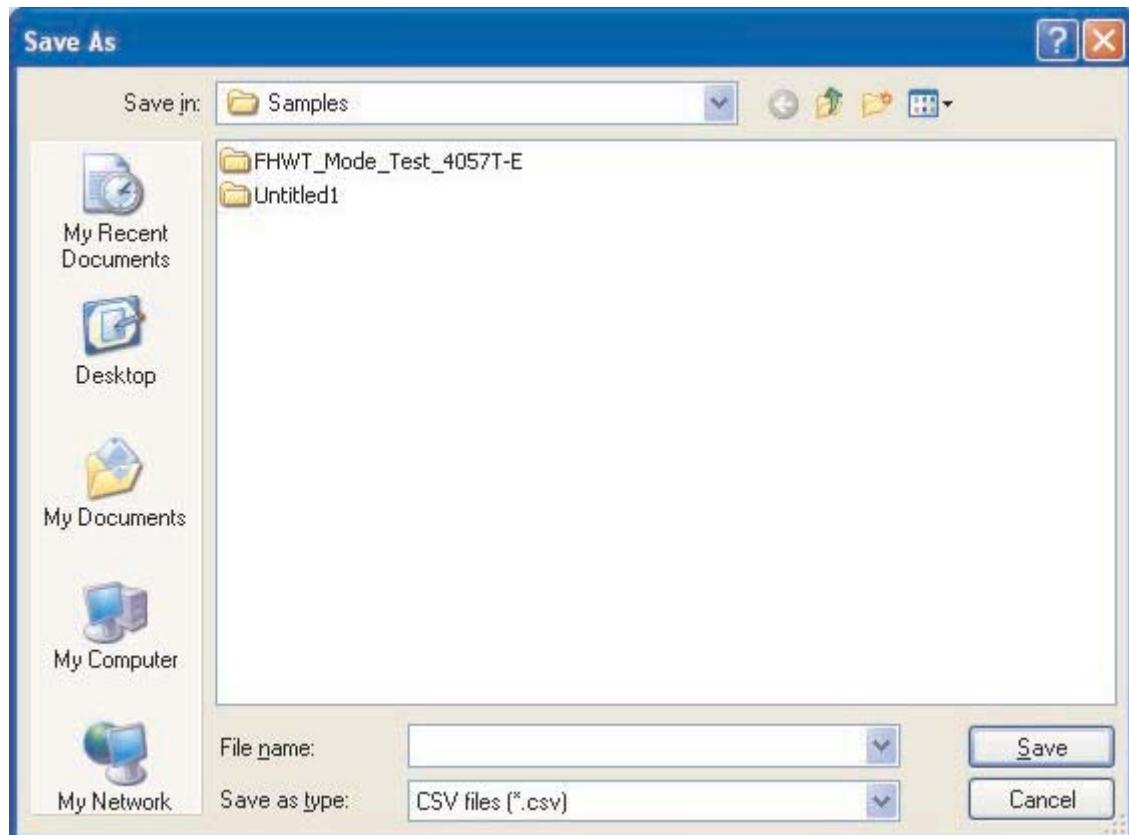
**Reset All Alarms:**

This will be delete all alarms and reset it to the default values. Before that it asks confirmation.

**Export:**

This becomes enable after creating the alarm database. This exports the alarm database into the CSV format.

CSV file includes Alarm Project configuration properties, list of alarms. This displays **Save File** dialog as:

**Import:**

This allows to import the CSV file alarm database.

Before that, please ensure for the following:

- a) Project configuration properties must be same.
- b) Tag should be exist in the tag database.
- c) No negative values allowed to enter.
- d) Alarm number is not allowed to change.
- e) Language should be installed.
- f) **Open File** dialog allow to select the CSV file.
- g) Import all alarms and its properties and update it accordingly in the existing database.

**Multi-language Support:**

Alarms supports to the multi-language text. Only that language should be added to the language list. Language list shows the added language and user is able to define alarm text for that language. After writing alarm text for particular alarm, the language Column is added in the data-grid view list. User can write **Alarm Text** up to 40 characters.

**Severity:**

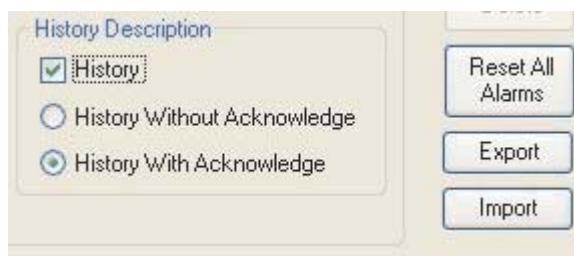
This can be defined for each alarm to show the alarms in the different alarm window/object. (Alarm window/object will display only those alarms having equal or greater severity). Range is 0 to 9 and default it is set to 0. (Priority decreases with ascending numbers)

**Print:**

This provides alarm notification for printing of real time alarms at runtime. After checked, it shows Yes in Print column.

**History:**

History enable to store alarms in the defined memory.



**History without Acknowledge:** - Tag can add in historical container when event occur on that alarm. And it moves position of alarm in the historical container when more than one events occur. In this type adding all events on same alarms in historical container without using acknowledge.

**History with Acknowledge:** - Tag can add in historical container when event occur on that alarm. And it over write the same alarm position in the container when more than one events occur. In this type use acknowledge for adding all events on same alarms in historical container.

## 8.4 Steps to be followed to create an alarm

1. Go to Project configuration dialog.
  2. Select Alarm Type
    - 16 Consecutive word alarms
    - 16 Random words alarms
    - Discrete alarms ( Conditional alarms)
  3. Acknowledge: Acknowledge All
  4. If Buffer is full: Erase previous and start from beginning
- Selectable  
Stop Logging.

### 8.4.1 If 16 Consecutive word selected

1. Add at least 16 consecutive 2-byte tags to the tag database.
2. If required add multi languages at language tab.
3. Also define Bit/Coil tag for Acknowledge tag.
4. In alarm definition ( Alarm list view), select first acknowledge tag.
5. Select First word tag from tag list, which is used for alarms.
6. Press Assign button. The selected tag and its bits get assigned to the 256 alarms.
7. Press Accept button to create the alarms, the Alarm Assign column shows "Yes".
8. Change the properties and also write alarm text in different languages (if defined).
9. Press Update button to update the properties for selected alarms.
10. If Delete button is pressed then it delete the selected alarm.
11. If Reset All Alarms button is pressed then it delete all the alarms.
12. Export button export the alarm database to the CSV file.
13. Import CSV to the existing database. Before doing this, first verify that Alarm type and tag in CSV file should be same as in the existing project, otherwise it will shows warning message.

### 8.4.2 If 16 Random word alarm is selected

1. At least one 2-byte tag should be present in the tag database.
2. If required add multi languages at language tab.
3. Also define Bit/Coil tag for Acknowledge tag.
4. In alarm definition ( Alarm list view), select first acknowledge tag.
5. Select First word tag from tag list, which is used for alarms.
6. Press Assign button. The selected tag and its bits get assigned to the selected Alarm section / Alarm word. For one section 16 alarms are defined. Each bit of tag get assigned to the alarms and hence group of 16 bits forms one Alarm section or Alarm word. 256 alarms divided into the 16 Alarm sections.
7. Press Accept button to create the alarms, the Alarm Assign column shows "Yes".
8. Change the properties and also write alarm text in different languages (if defined).
9. Press Update button to update the properties for selected alarms.
10. If Delete button is pressed then it delete the selected alarm.
11. If Reset All Alarms button is pressed then it delete all the alarms.
12. Export button export the alarm database to the CSV file

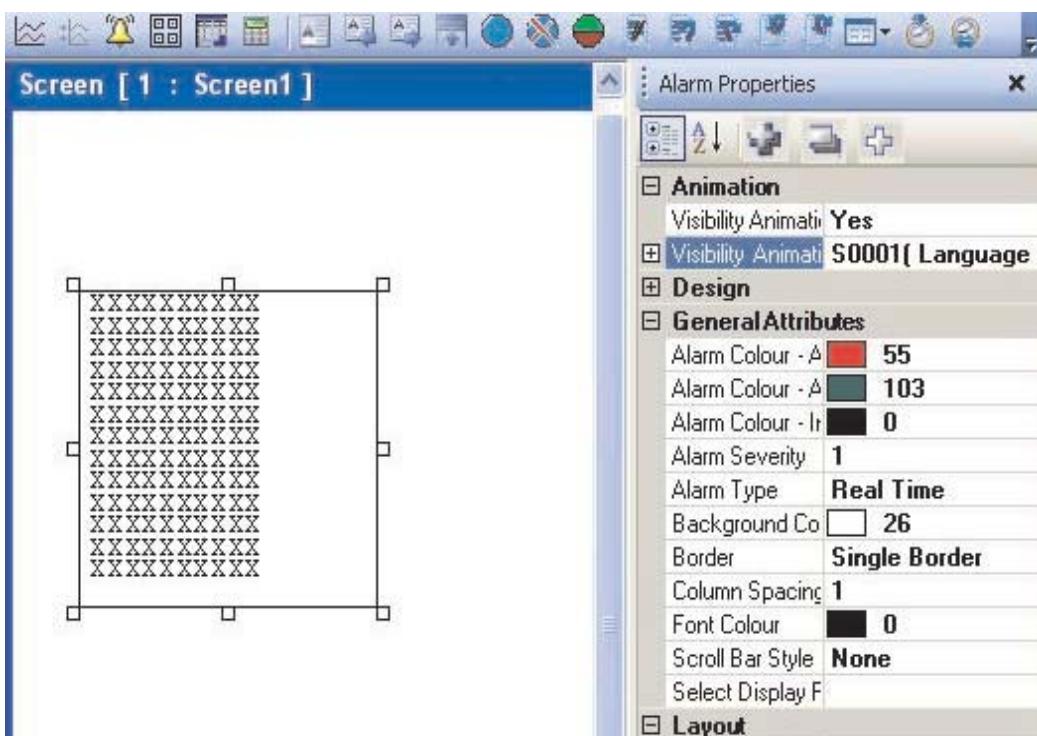
### 8.4.3 If Discrete / Conditional alarm is selected

1. Discrete / word tag must be present in the tag database.
2. If required add multi languages at language tab.
3. Also define Bit/Coil tag for Acknowledge tag.
4. In alarm definition ( Alarm list view), select first acknowledge tag.
5. Select First word tag from tag list, which is used for alarms.
6. Select tag from tag list, comparison operator and compare with either select tag or constant value.

7. Constant value should not exceed more than 65535.
8. Press Assign button. The selected tag, comparison operator and compare with parameter form one condition string and also shown in the column “Alarm Condition”.
9. Press Accept button to create the alarms, the Alarm Assign column shows “Yes”.
10. Change the properties and also write alarm text in different languages (if defined).
11. Press Update button to update the properties for selected alarms.
12. If Delete button is pressed then it delete the selected alarm.
13. If Reset All Alarms button is pressed then it delete all the alarms.
14. Export button export the alarm database to the CSV file.

## 8.5 Alarm Window

In the creating “Screen” application, you can create alarm using  button.



### General Attributes:

Active and Acknowledge Alarm Color:

You can define alarm color if it is active & acknowledged.

Active and Unacknowledge Alarm Color:

You can define alarm color if it is active & unacknowledged.

**Note:** These two attributes are applicable to “Real time” alarm type only.

Alarm Order: You can define preferences to alarm

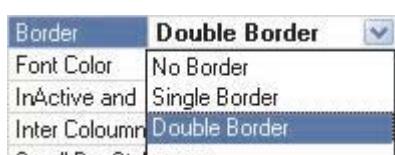
Alarm Severity: You can define severity to specific alarm from 0 to 9

Alarm Type: You can specify type of alarm here.



Background: You can define background color for the alarm on screen.

Border: You can select the border as:



Font Color: You can define the color of the font.

InActive and Unacknowledge Alarm Color:

You can define the alarm color if it is InActive & Unacknowledged.

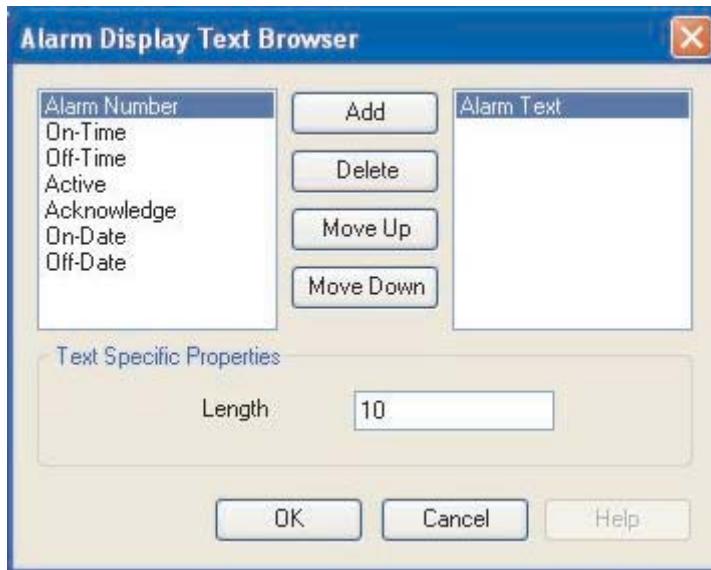
**Note:** This attribute is not applicable to "Historical Alarm".

Inter Column Distance:

You can define distance between two columns.

Scroll Bar Style: You can set scroll bar appearance to alarm window.

Select Display Field:



This list contains the available columns that can be viewed in an alarm display Text Browser:

1. Alarm Text – Text defined for the alarm.
2. Alarm Number – Number defined for the alarm.
3. On time – The time at which the alarm made transition from OFF to ON state.
4. Off time - The time at which the alarm made transition from ON to OFF state.
5. Active – The present status of the alarm [Active/inactive].
6. Acknowledge - The status of the acknowledge attribute for the alarm.
7. On date – The date at which the alarm made transition from OFF to ON state.
8. Off date – The date at which the alarm made transition from ON to OFF state.

**Note:** The active and acknowledge attributes are not applicable for historical alarms.

## **CONFIGURATION OF EXPANSION MODULES**

In this chapter. . . .

- \* Configuration of digital expansion models
- \* Configuration of analog expansion models
- \* Configuration of FPEA-0402U-16 model

## Configuration of expansion models

### 9.1 Configuration of digital expansions

MW Allocation Table :

Module	MW Range	Total No Supported
Base	MW0000-MW0059	60
Expansion Slot 1	MW0100-MW0123	24
Expansion Slot 2	MW0200-MW0223	24
Expansion Slot 3	MW0300-MW0323	24
Expansion Slot 4	MW0400-MW0423	24
Expansion Slot 5	MW0500-MW0523	24

#### Configuration Registers Allocation for Local IOs:

MW Type	Local CH1	Local CH2
HSC Configuration register	MW0010	MW0020
High Speed Counter (HSC) Register	MW0011 MW0012	MW0021 MW0022
HSC Preset Register	MW0013 MW0014	MW0023 MW0024
HSC Enable Bit	MW0015_0 (M00240)	MW0025_0 (M00400)
HSC Reset Bit	MW0015_1 (M00241)	MW0025_1 (M00401)

These are default system tags.

#### Configuration Registers Allocation for Expansions IOs:

MW Type	Expansion Slot 1		Expansion Slot 2		Expansion Slot 3	
	CH1	CH2	CH1	CH2	CH1	CH2
HSC Configuration register	MW0100	MW0106	MW0200	MW0206	MW0300	MW0306
High Speed Counter (HSC) Register	MW0101	MW0107	MW0201	MW0207	MW0301	MW0307
HSC Preset Register	MW0103 MW0104	MW0109 MW0110	MW0203 MW0204	MW0209 MW0210	MW0303 MW0304	MW0309 MW0310
HSC Enable Bit	MW0105_0 (M01080)	MW0111_0 (M01176)	MW0205_0 (M02080)	MW0211_0 (M02176)	MW0305_0 (M03080)	M311_0 (M02176)
HSC Reset Bit	MW0105_1 (M01081)	MW0111_1 (M01177)	MW0205_1 (M02081)	MW0211_1 (M02177)	MW0305_1 (M03081)	M311_1 (M02177)

MW Type	Expansion Slot 4		Expansion Slot 5	
	CH1	CH2	CH1	CH2
HSC Configuration register	MW0400	MW0406	MW0500	MW0506
High Speed Counter (HSC) Register	MW0401 MW0402	MW0407 MW0408	MW0501 MW0502	MW0507 MW0508
HSC Preset Register (CH1)	MW0403 MW0404	MW0409 MW0410	MW0503 MW0504	MW0509 MW0510
HSC Enable Bit (CH1)	M405_0 (M04080)	M411_0 (M04176)	M505_0 (M05080)	M511_0 (M05176)
HSC Reset Bit(CH1)	M405_1 (M04081)	M411_1 (M04177)	M505_1 (M05081)	M511_1 (M05177)

These are default system Tags as per Expansion Module and Type configuration selected.

## 9.2 Configuration of Analog expansions

### Analog Input/Output Range Selection:

Analog Input Range:

Sr. No	Input Range	MW count to select Input range as per Channel
1	4 to 20mA	0
2	0 to 10V	1
3	-10 to 10V	2
4	0 to 20mA	3

Analog Output Range:

Sr. No	Output Range	MW count to select Output range as per Channel
1	4 to 20mA	0
2	0 to 10V	1
3	0 to 20mA	3

FPEA0202L Configuration Registers Allocation for Expansions Analog Input:

MW Type	Expansion Slot 1		Expansion Slot 2		Expansion Slot3	
	CH0	CH1	CH0	CH1	CH0	CH1
Analog Input Config CHx type	MW0100	MW0101	MW0200	MW0201	MW0300	MW0301

MW Type	Expansion Slot 4		Expansion Slot 5	
	CH0	CH1	CH0	CH1
Analog Input Config CHx type	MW0400	MW0401	MW0500	MW0501

FPEA0202L Input Registers Allocation for Expansions Analog Input:

MW Type	Expansion Slot 1		Expansion Slot 2		Expansion Slot3	
	CH0	CH1	CH0	CH1	CH0	CH1
Analog Input CHx type	XW0100	XW0101	XW0200	XW0201	XW0300	XW0301

MW Type	Expansion Slot 4		Expansion Slot 5	
	CH0	CH1	CH0	CH1
Analog Input CHx type	XW0400	XW0401	XW0500	XW0501

## FPEA0202L Configuration Registers Allocation for Expansions Analog Output:

MW Type	Expansion Slot 1		Expansion Slot 2		Expansion Slot 3	
	CH0	CH1	CH0	CH1	CH0	CH1
Analog Output CHx type	MW0102	MW0103	MW0202	MW0203	MW0302	MW0303
MW Type	Expansion Slot 4		Expansion Slot 5			
	CH0	CH1	CH0	CH1		
Analog Output CHx type	MW0402	MW0403	MW0502	MW0503		

## FPEA0202L Output Registers Allocation for Expansions Analog Output:

MW Type	Expansion Slot 1		Expansion Slot 2		Expansion Slot 3	
	CH0	CH1	CH0	CH1	CH0	CH1
Analog Input CHx type	YW0102	YW0103	YW0202	YW0203	YW0302	YW0303
MW Type	Expansion Slot 4		Expansion Slot 5			
	CH0	CH1	CH0	CH1		
Analog Input CHx type	YW0402	YW0403	YW0502	YW0503		

## FPEA0400L Configuration Registers Allocation for Expansions:

MW Type	Expansion Slot 1			
Analog Input Config CHx type	CH0 MW0100	CH1 MW0101	CH2 MW0102	CH3 MW0103
MW Type	Expansion Slot 2			
Analog Input Config CHx type	CH0 MW0200	CH1 MW0201	CH2 MW0202	CH3 MW0203
MW Type	Expansion Slot 3			
Analog Input Config CHx type	CH0 MW0300	CH1 MW0301	CH2 MW0302	CH3 MW0303
MW Type	Expansion Slot 4			
Analog Input Config CHx type	CH0 MW0400	CH1 MW0401	CH2 MW0402	CH3 MW0403
MW Type	Expansion Slot 5			
Analog Input Config CHx type	CH0 MW0500	CH1 MW0501	CH2 MW0502	CH3 MW0503

## FPEA0400L Input Registers Allocation for Expansions:

MW Type	Expansion Slot 1			
Analog Input CHx type	CH0 XW0100	CH1 XW0101	CH2 XW0102	CH3 XW0103
MW Type	Expansion Slot 2			
Analog Input CHx type	CH0 XW0200	CH1 XW0201	CH2 XW0202	CH3 XW0203

## FPEA0400L Input Registers Allocation for Expansions:

MW Type	Expansion Slot 3			
Analog Input CHx type	CH0 XW0300	CH1 XW0301	CH2 XW0302	CH3 XW0303
MW Type	Expansion Slot 4			
Analog Input CHx type	CH0 XW0400	CH1 XW0401	CH2 XW0402	CH3 XW0403
MW Type	Expansion Slot 5			
Analog Input CHx type	CH0 XW0500	CH1 XW0501	CH2 XW0502	CH3 XW0503

## FPEA0800LV and FPEA0800LC Configuration Registers Allocation for Expansions:

MW Type	Expansion Slot 1							
Analog Input Config CHx type	CH0 MW0100	CH1 MW0101	CH2 MW0102	CH3 MW0103	CH4 MW0104	CH5 MW0105	CH6 MW0106	CH7 MW0107
MW Type	Expansion Slot 2							
Analog Input Config CHx type	CH0 MW0200	CH1 MW0201	CH2 MW0202	CH3 MW0203	CH4 MW0204	CH5 MW0205	CH6 MW0206	CH7 MW0207
MW Type	Expansion Slot 3							
Analog Input Config CHx type	CH0 MW0300	CH1 MW0301	CH2 MW0302	CH3 MW0303	CH4 MW0304	CH5 MW0305	CH6 MW0306	CH7 MW0307
MW Type	Expansion Slot 4							
Analog Input Config CHx type	CH0 MW0400	CH1 MW0401	CH2 MW0402	CH3 MW0403	CH4 MW0404	CH5 MW0405	CH6 MW0406	CH7 MW0407
MW Type	Expansion Slot 5							
Analog Input Config CHx type	CH0 MW0500	CH1 MW0501	CH2 MW0502	CH3 MW0503	CH4 MW0504	CH5 MW0505	CH6 MW0506	CH7 MW0507

## FPEA0800LV and FPEA0800LC Input Registers Allocation for Expansions:

MW Type	Expansion Slot 1							
Analog Input CHx type	CH0 XW0100	CH1 XW0101	CH2 XW0102	CH3 XW0103	CH4 XW0104	CH5 XW0105	CH6 XW0106	CH7 XW0107
MW Type	Expansion Slot 2							
Analog Input CHx type	CH0 XW0200	CH1 XW0201	CH2 XW0202	CH3 XW0203	CH4 XW0204	CH5 XW0205	CH6 XW0206	CH7 XW0207
MW Type	Expansion Slot 3							
Analog Input CHx type	CH0 XW0300	CH1 XW0301	CH2 XW0302	CH3 XW0303	CH4 XW0304	CH5 XW0305	CH6 XW0306	CH7 XW0307

MW Type	Expansion Slot 4							
	CH0	CH1	CH2	CH3	CH4	CH5	CH6	CH7
Analog Input CHx type	XW0400	XW0401	XW0402	XW0403	XW0404	XW0405	XW0406	XW0407

MW Type	Expansion Slot 5							
	CH0	CH1	CH2	CH3	CH4	CH5	CH6	CH7
Analog Input CHx type	XW0500	XW0501	XW0502	XW0503	XW0504	XW0505	XW0506	XW0507

### 9.3 Configuration of FPEA-0402U-16 Unit:

This Expansion Module will be configured through IO Allocation from Flexisoft Software.

There are Configuration Registers through which all analog inputs and outputs can be configured.

- 1) Connect the Auxiliary 24V supply to module to the removable terminals indicated by "0V" and "24V".
- 2) Connect the input sensors to input of module as per the type of input as shown in wiring diagram (Section 2.5.8).
- 3) Connect the outputs to the output of module as shown in wiring diagram.
- 4) Select the type of module in FlexiSoft software and the expansion slot Number.
- 5) Then configure the types of inputs from Flexisoft.
- 6) Configure the Outputs of module from FlexiSoft.
- 7) Download the Application and Ladder in Base Module.

Register table for expansion I/O module:

Number of inputs: 4

Number of outputs: 2

Register Description		Expansion Slot				
		Slot1	Slot2	Slot3	Slot4	Slot5
Configuration Register	Analog Input (CH0) Type- Slotxx	MW0100	MW0200	MW0300	MW0400	MW0500
	Analog Input (CH1) Type- Slotxx	MW0101	MW0201	MW0301	MW0401	MW0501
	Analog Input (CH2) Type- Slotxx	MW0102	MW0202	MW0302	MW0402	MW0502
	Analog Input (CH3) Type- Slotxx	MW0103	MW0203	MW0303	MW0403	MW0503
Input Register	Input Register(CH0)- Slotxx	XW0100 XW0101	XW0200 XW0201	XW0300 XW0301	XW0400 XW0401	XW0500 XW0501
	Input Register(CH1)- Slotxx	XW0102 XW0103	XW0202 XW0203	XW0302 XW0303	XW0402 XW0403	XW0502 XW0503
	Input Register(CH2)- Slotxx	XW0104 XW0105	XW0204 XW0205	XW0304 XW0305	XW0404 XW0405	XW0504 XW0505
	Input Register(CH3)- Slotxx	XW0106 XW0107	XW0206 XW0207	XW0306 XW0307	XW0406 XW0407	XW0506 XW0507
Config. Register	Analog Output (CH0) Type- Slotxx	MW0104	MW0204	MW0304	MW0404	MW0504
	Analog Output (CH1) Type- Slotxx	MW0105	MW0205	MW0305	MW0405	MW0505
Output Register	Output Register(CH0)- Slotxx	YW0100	YW0200	YW0300	YW0400	YW0500
	Output Register(CH1)- Slotxx	YW0101	YW0201	YW0301	YW0401	YW0501

## Configuration Settings:

Input Type		Value in Configuration Register (Dec.)
Voltage	0 to 10V	1
	0 to 5V	6
	-10 to +10V	18
Millivolt	0 to 50mV	5
	0 to 100mV	4
mA	4 to 20mA	2
	0 to 20mA	3
RTD	Alpha 1	7
	Alpha 2	8
	PT1000	9
Thermocouple	J	14
	K	15

Output Type		Value in Configuration Register (Dec.)
Voltage	0 to 10V	2
	0 to 5V	1
mA	4 to 20mA	5
	0 to 20mA	6

## Analog Input Error Register- Slotxx:

Sr.No.	BIT	Corresponding Error
1	BIT 0	mV_Input1_Error
2	BIT 1	RTD_Input1_Error
3	BIT 2	TC_Input1_Error
4	BIT 3	mV_Input2_Error
5	BIT 4	RTD_Input2_Error
6	BIT 5	TC_Input2_Error
7	BIT 6	mV_Input3_Error
8	BIT 7	RTD_Input3_Error
9	BIT 8	TC_Input3_Error
10	BIT 9	mV_Input4_Error
11	BIT 10	RTD_Input4_Error
12	BIT 11	TC_Input4_Error
13	BIT 12	RESERVE
14	BIT 13	RESERVE
15	BIT 14	RESERVE
16	BIT 15	RESERVE

NOTE :- TC Thermocouple

## **HIGH SPEED COUNTER**

In this chapter. . . .

- \* Configuring HSC of general expansion models
- \* Configuring HSC of model FPED-HS-0808
- \* Single Phase Counter
- \* Quadrature Bi-pulse Counter
- \* MW Allocation Registers

This chapter is applicable for models FPED-HS-0808N, FPED-HS-0808P, FPED-HS-0808RN and FPED-HS-0808RP

## 10.1 High Speed Counter of general expansion modules

MW Allocation Table :

Module	MW Range	Total No Supported
Base	MW0000-MW0059	60
Expansion Slot 1	MW0100-MW0123	24
Expansion Slot 2	MW0200-MW0223	24
Expansion Slot 3	MW0300-MW0323	24
Expansion Slot 4	MW0400-MW0423	24
Expansion Slot 5	MW0500-MW0523	24

### Configuration Registers Allocation for Local IOs:

MW Type	Local CH1	Local CH2
HSC Configuration register	MW0010	MW0020
High Speed Counter (HSC) Register	MW0011 MW0012	MW0021 MW0022
HSC Preset Register	MW0013 MW0014	MW0023 MW0024
HSC Enable Bit	MW0015_0 (M00240)	MW0025_0 (M00400)
HSC Reset Bit	MW0015_1 (M00241)	MW0025_1 (M00401)

These are default system tags.

### Configuration Registers Allocation for Expansions IOs:

MW Type	Expansion Slot 1		Expansion Slot 2		Expansion Slot 3	
	CH1	CH2	CH1	CH2	CH1	CH2
HSC Configuration register	MW0100	MW0106	MW0200	MW0206	MW0300	MW0306
High Speed Counter (HSC) Register	MW0101 MW0102	MW0107 MW0108	MW0201 MW0202	MW0207 MW0208	MW0301 MW0302	MW0307 MW0308
HSC Preset Register	MW0103 MW0104	MW0109 MW0110	MW0203 MW0204	MW0209 MW0210	MW0303 MW0304	MW0309 MW0310
HSC Enable Bit	MW0105_0 (M01080)	MW0111_0 (M01176)	MW0205_0 (M02080)	MW0211_0 (M02176)	MW0305_0 (M03080)	M311_0 (M02176)
HSC Reset Bit	MW0105_1 (M01081)	MW0111_1 (M01177)	MW0205_1 (M02081)	MW0211_1 (M02177)	MW0305_1 (M03081)	M311_1 (M02177)

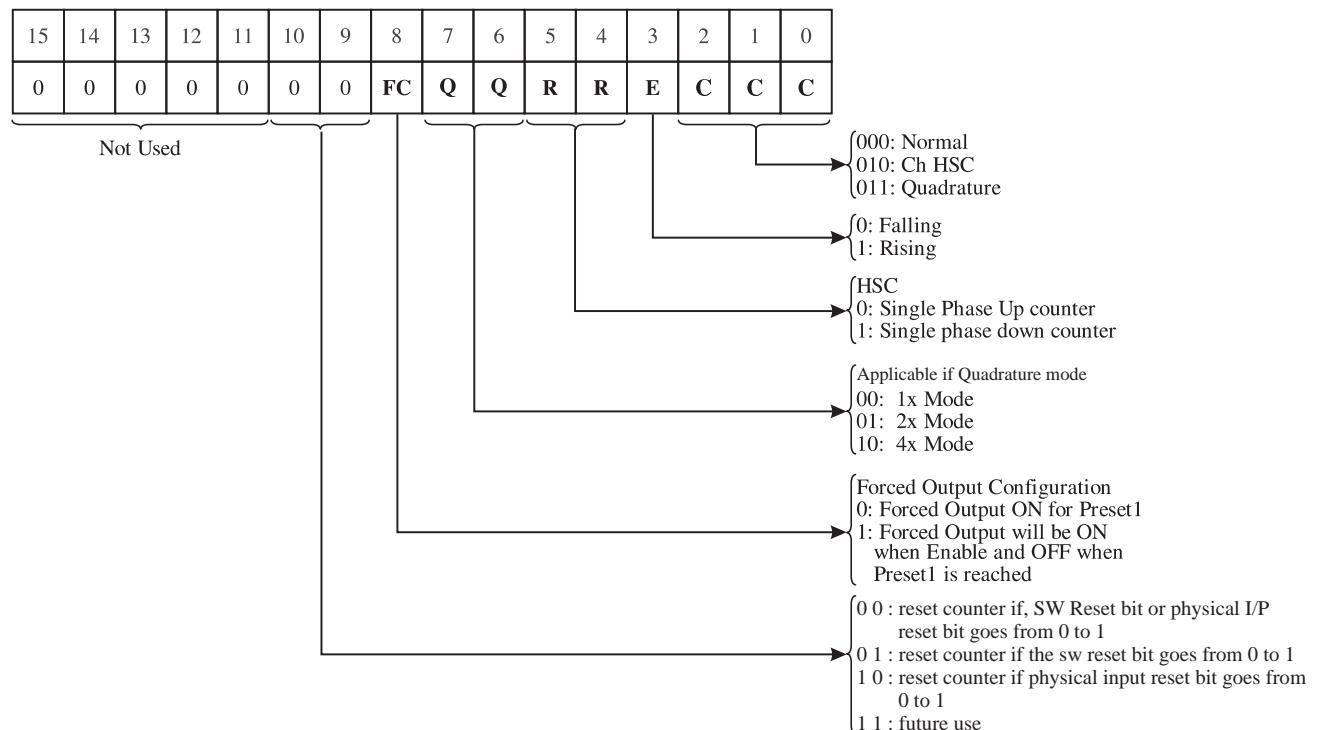
MW Type	Expansion Slot 4		Expansion Slot 5	
	CH1	CH2	CH1	CH2
HSC Configuration register	MW0400	MW0406	MW0500	MW0506
High Speed Counter (HSC) Register	MW0401 MW0402	MW0407 MW0408	MW0501 MW0502	MW0507 MW0508
HSC Preset Register	MW0403 MW0404	MW0409 MW0410	MW0503 MW0504	MW0509 MW0510
HSC Enable Bit	M405_0 (M04080)	M411_0 (M04176)	M505_0 (M05080)	M511_0 (M05176)
HSC Reset Bit	M405_1 (M04081)	M411_1 (M04177)	M505_1 (M05081)	M511_1 (M05177)

These are default system Tags as per Expansion Module and Type configuration selected.

#### Configuration Registers Details

The Mode selection is done through Configuration registers as below:

Configuration Register: (MWssrr)



IO Type	Base		Expansion	
	CH1	CH2	CH1	CH2
Input number to count high speed pulses	X1	X2	X0	X5
Output number which will turn ON when counter reaches Preset	Y0	Y1	Y1	Y6
Reset Pin	X4	X5	X1	X6

Example procedure for Expansion high speed counter:

- 1) Give the high speed pulses at X0 – Channel1 and X5 – Channel2 of the expansion module.
- 2) Write value in the HSC Configuration register (CH1/CH2) slotxx.
- 3) Write value in HSC Preset register (CH1/CH2) slotxx.
- 4) Make HSC Enable Bit (CH1/CH2) slotxx ON.
- 5) The High Speed Counter (HSC) register (CH1/CH2) slotxx will increment from 0. The expansion output Y1 for Channel1 and Y6 for Channel 2 will become ON.
- 6) Make HSC Reset Bit (CH1/CH2)-Slotxx ON. Then the High Speed Counter (HSC) register (CH1/CH2) slotxx on screen will become 0. The expansion output Y1<sup>[1]</sup> for Channel1 and Y6<sup>[1]</sup> for Channel 2 will become OFF.
- 7) To again count the high speed pulses on the expansion input channels, make HSC Reset Bit (CH1/CH2)-Slotxx OFF. Make HSC Enable Bit (CH1/CH2) slotxx ON (If it is already ON, make it OFF and then ON again).

Reset Pin for channel 1 is X1 and for channel 2 it is X6.

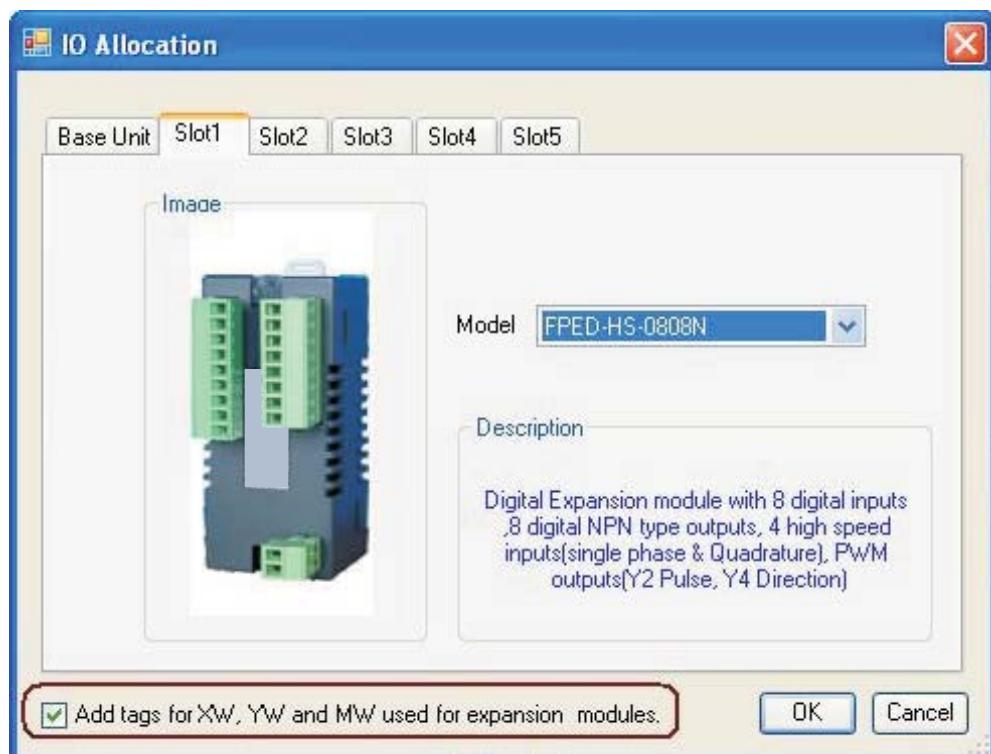
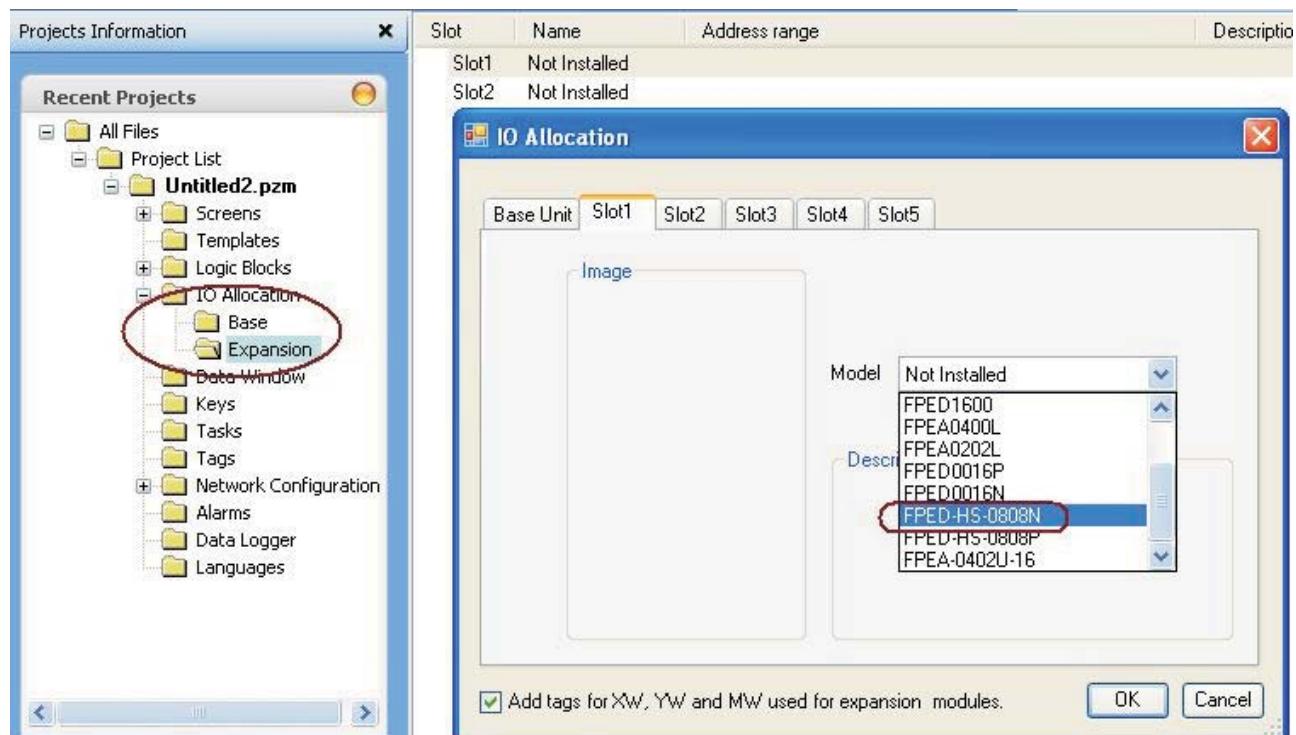
**Note for [1]:** Force Output is not applicable for FPED1600 because it does not have digital outputs.

## 10.2 Configuring High Speed Counter for FPES-HS-0808 models

This chapter explains you to configure and use the High Speed Counter input. The FPED-HS-0808N model has a 4 channel High Speed Counter.

to configure high speed counter follow the steps given below:

1. Run FlexiSoft.
2. Select the HMI unit with expansion.
3. Select expansion model with HSC from IO allocation window as shown below:



In this docker window,

Add tags for XW, YW and MW used for expansion modules.

this option is “enabled”, by default. So, once the user selects the HSC expansion model, this will automatically entered all the default tag related to high speed as shown below:

Tag No	Tag Name	Port	Tag Address	Byte(s)	Node Name	Tag Type
1	HSC Enable Bit (CH1)- Slot01	-	M01080	bit	Operator Panel	User Defined Tag
2	HSC Reset Bit (CH1)- Slot01	-	M01081	bit	Operator Panel	User Defined Tag
3	HSC Interrupt Enable Bit (CH1)- Slot01	-	M01082	bit	Operator Panel	User Defined Tag
4	HSC Preset Reached (CH1)- Slot01	-	M01083	bit	Operator Panel	User Defined Tag
5	HSC Enable Bit (CH2)- Slot01	-	M01176	bit	Operator Panel	User Defined Tag
6	HSC Reset Bit (CH2)- Slot01	-	M01177	bit	Operator Panel	User Defined Tag
7	HSC Interrupt Enable Bit (CH2)- Slot01	-	M01178	bit	Operator Panel	User Defined Tag
8	HSC Preset Reached (CH2)- Slot01	-	M01179	bit	Operator Panel	User Defined Tag
9	HSC Enable Bit (CH3)- Slot01	-	M01272	bit	Operator Panel	User Defined Tag
10	HSC Reset Bit(CH3)- Slot01	-	M01273	bit	Operator Panel	User Defined Tag
11	HSC Interrupt Enable Bit (CH3)- Slot01	-	M01274	bit	Operator Panel	User Defined Tag
12	HSC Preset Reached(CH3)- Slot01	-	M01275	bit	Operator Panel	User Defined Tag
13	HSC Enable Bit (CH4)- Slot01	-	M01368	bit	Operator Panel	User Defined Tag
14	HSC Reset Bit(CH4)- Slot01	-	M01369	bit	Operator Panel	User Defined Tag
15	HSC Interrupt Enable Bit (CH4)- Slot01	-	M01370	bit	Operator Panel	User Defined Tag
16	HSC Preset Reached(CH4)- Slot01	-	M01371	bit	Operator Panel	User Defined Tag
17	Pulse width error flag(CH1)- Slot01	-	M01465	bit	Operator Panel	User Defined Tag
18	ON duty setting error flag(CH1)- Slot01	-	M01466	bit	Operator Panel	User Defined Tag
19	Frequency Setting error flag(CH1)- Slot01	-	M01467	bit	Operator Panel	User Defined Tag
20	Acceleration Time Setting error flag(CH1)- SI...	-	M01468	bit	Operator Panel	User Defined Tag
21	Deceleration Time Setting error flag(CH1)- S...	-	M01469	bit	Operator Panel	User Defined Tag
22	No of Total Pulses Setting error flag(CH1)- SI...	-	M01470	bit	Operator Panel	User Defined Tag
23	Pulse width error flag(CH2)- Slot01	-	M01561	bit	Operator Panel	User Defined Tag
24	ON duty setting error flag(CH2)- Slot01	-	M01562	bit	Operator Panel	User Defined Tag
25	Frequency Setting error flag(CH2)- Slot01	-	M01563	bit	Operator Panel	User Defined Tag
26	Acceleration Time Setting error flag(CH2)- SI...	-	M01564	bit	Operator Panel	User Defined Tag
27	Deceleration Time Setting error flag(CH2)- S...	-	M01565	bit	Operator Panel	User Defined Tag
28	No of Total Pulses Setting error flag(CH2)- SI...	-	M01566	bit	Operator Panel	User Defined Tag
29	Pulse Enable Flag(CH1)- Slot01	-	M01576	bit	Operator Panel	User Defined Tag
30	Pulse Enable Flag(CH2)- Slot01	-	M01577	bit	Operator Panel	User Defined Tag
31	End of Total Pulses(CH1)- Slot01	-	M01784	bit	Operator Panel	User Defined Tag
32	End of Total Pulses(CH2)- Slot01	-	M01785	bit	Operator Panel	User Defined Tag

Using this tag database, a user can run the HSC in different mode.

### 10.3 Single phase Counter

[MWssrr Mode Select Bits = 010]

When the count input is changed from OFF to ON, the count value is increased by 1. When the count value reaches the set value, the count value is reset to 0. This counter operation is enabled while the HSC enable bit is ON. The count value is reset to 0 when the Reset bit is changed from OFF to ON. The count value range is H0000 0000 to HFFFF FFFF (32-bit data).

For example, an application is given below:

Screen [ 1 : Screen1 ]	
<b>CONFIG. Reg</b>	99999
<b>Preset</b>	9999999999
<b>Soft Gate Enable</b>	XXX
<b>Count</b>	9999999999
<b>Reset Bit</b>	XXX
<b>Forced output</b>	99999

1. Selects the high speed expansion model.
2. Create an application as shown in the image here.
3. Define Config. Register. The value of this configuration register will define the mode of operation of high speed counter.  
e.g. If the config. register value is 2, then HSC will work in single phase mode.

Screen [ 1 : Screen1 ]	
<b>CONFIG. Reg</b>	99999
<b>Preset</b>	9999999999
<b>Soft Gate Enable</b>	XXX
<b>Count</b>	9999999999
<b>Reset Bit</b>	XXX
<b>Forced output</b>	99999
<b>Preset Reached</b>	XXX

Data Entry Properties	
Data Type	Unsigned [0 To 65535]
Enable Control Bit	No
Hide Data	No
Keypad	Yes
Maximum Value	65535
Minimum Value	2
Screen Name	Numeric Keypad
Screen Number	65001
Tag Address	MW0100
Tag Name	HSC Configuration register

Design	
ID	33

The chart given on the next page will guide you the value for which HSC can RUN in different mode.

Normal Config	HSC Condition	Value in config register
Normal Input		0
HSC Single phase UP Counter	Forced O/P ON preset reach	2
	Forced O/P OFF preset reach, ON when enable	258
Quadrature 1X mode	Forced O/P ON preset reach	3
	Forced O/P OFF preset reach, ON when enable	259
Quadrature 2X mode	Forced O/P ON preset reach	67
	Forced O/P OFF preset reach, ON when enable	323
Quadrature 4X mode	Forced O/P ON preset reach	131
	Forced O/P OFF preset reach, ON when enable	387

For more configuration settings refer section 14.5 (Configuration Register Details table)

4. Set preset value [number up to which user wants to count] as shown below:

Screen [ 1 : Screen1 ]	
CONFIG. Reg	99999
Preset	9999999999
Soft Gate Enable	XXX
Count	9999999999
Reset Bit	XXX
Forced output	99999
Preset Reached	XXX

**Data Entry Properties**

- Data Type: Unsigned [0 To 4294967295]
- Enable Control Bit: No
- Hide Data: No
- Keypad: Yes
- Maximum Value: 4294967295
- Minimum Value: 0
- Screen Name: Numeric Keypad
- Screen Number: 65001
- Tag Address: MW0103
- Tag Name: HSC Preset Register [CH1]

**Design**

- Id: 34
- Name: Register Data Entry

5. Set soft gate to ON as shown below:

Screen [ 1 : Screen1 ]	
CONFIG. Reg	99999
Preset	9999999999
Soft Gate Enable	XXX
Count	9999999999
Reset Bit	XXX
Forced output	99999
Preset Reached	XXX

Text Colour: 0

**Data Entry Properties**

- Enable Control Bit: No
- Keypad: Yes
- Screen Name: Bit Keypad
- Screen Number: 65003
- Tag Address: M01080
- Tag Name: HSC Enable Bit (CH1)- SI

**Design**

- Id: 9
- Name: Coil Data Entry

**Layout**

- Bottom Right: 268, 97
- Top Left: 250, 89

6. Define Count register, where user can see the counting.

Parameter	Value
CONFIG. Reg	99999
Preset	9999999999
Soft Gate Enable	XXX
Count	9999999999
Reset Bit	XXX
Forced output	99999
Preset Reached	XXX

**Properties Panel (Right):**

- Font: 5 x 7
- Format: 10,0
- Text Colour: 0
- Design:**
  - Id: 25
  - Name: Register Display Data
- Display Data Properties:**
  - Data Type: Unsigned [0 To 4294967295]
  - Display Leading Zeros: No
  - Hide Data: No
  - Tag Address: MW0101
  - Tag Name: High Speed Counter (HSC)
- Layout:**
  - Bottom Right: 268, 130

7. Define Reset Bit [to reset the count number entered in PRESET"].

Parameter	Value
CONFIG. Reg	99999
Preset	9999999999
Soft Gate Enable	XXX
Count	9999999999
Reset Bit	0000
Forced output	99999
Preset Reached	XXX

**Properties Panel (Right):**

- Appearance:**
  - Background Colour: 26
  - Border: None
  - Font: 5 x 7
  - Off Text: Off
  - On Text: On
  - Text Colour: 0
- Data Entry Properties:**
  - Enable Control Bit: No
  - Keypad: Yes
  - Screen Name: Bit Keypad
  - Screen Number: 65003
  - Tag Address: M01081
  - Tag Name: HSC Reset Bit (CH1)- Slot
- Design:**
  - Bottom Right: 268, 130

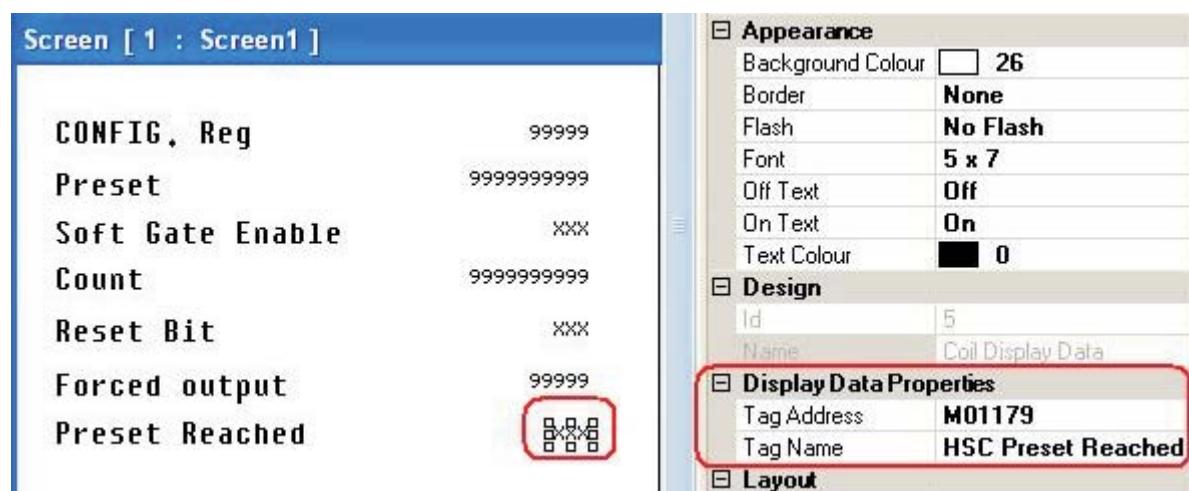
8. Define forced output value [count once reach the value, user can set a output may be to ON/OFF LED or to start any process etc].

Parameter	Value
CONFIG. Reg	99999
Preset	9999999999
Soft Gate Enable	XXX
Count	9999999999
Reset Bit	XXX
Forced output	0000
Preset Reached	XXX

**Properties Panel (Right):**

- Appearance:**
  - Background Colour: 26
  - Border: None
  - Font: 5 x 7
  - Format: 5,0
  - Text Colour: 0
- Data Entry Properties:**
  - Data Type: Unsigned [0 To 65535]
  - Enable Control Bit: No
  - Hide Data: No
  - Keypad: Yes
  - Maximum Value: 65535
  - Minimum Value: 0
  - Screen Name: Numeric Keypad
  - Screen Number: 65001
  - Tag Address: YW0100
  - Tag Name: Slot1\_OutputReg\_00000

9. When the value of high speed counter register reaches to value of preset register, then HSC Preset Reached bit will be ON.



10. Download the program to the HMI and enter the values with keypad on the screen.

Related registers:

Function	Register/device				Remarks
	Channel 1	Channel 2	Channel 3	Channel 4	
Count input	X0	X5	X2	X7	Count Input channels
Reset input	X1	X6	X3	X4	Physical reset i/p channels
Count Value	MW0101 MW0102	MW0107 MW0108	MW0113 MW0114	MW0119 MW0120	Data range: H0000 0000 to HFFFF FFFF
Preset	MW0103 MW0104	MW0109 MW0110	MW0115 MW0116	MW0121 MW0122	Set count value: Max. 4294967295
Soft gate	MW0105_0	MW0111_0	MW0117_0	MW0123_0	Operation is enabled when bit ON
Reset Bit	MW0105_1	MW0111_1	MW0117_1	MW0123_1	Used to reset the counter value
Preset Reached Bit	M01083	M01179	M01275	M01371	This bit turns on, when counter reaches to preset register value

Note1: When all four channels are used as HSC, IP1 to IP8 cannot be used as normal input devices. However, if either one channel is used, the inputs for unused channel can be used as normal input devices.

Note2: Two words are used for storing the double word (32bit) count/set values.  
Lower word will contain Lower 16 bit value and Higher word will contain Higher 16 bit  
This register storage scheme is applicable for all the modes.  
value. Eg. Count value : MW0101, MW0102

So if count value is (Hex) 87654321  
MW0101 = 4321 (Hex)  
MW0102= 8765 (Hex)

Note3: Input5, Input6, Input7 and input8 are used as reset inputs for count inputs 1, 2, 3 and 4. So do not use Input5, Input6, Input7 and input8 as normal inputs when expansion module is configured in this mode.

## 10.4 Quadrature bi-pulse counter

For Quadrature mode, there are two pairs X0-X5 and X2-X7. When the count value reaches up to the Preset, forced output will be activated and preset reached bit will be ON. This counter operation is enabled while the soft-gate (HSC Enable bit) is ON.

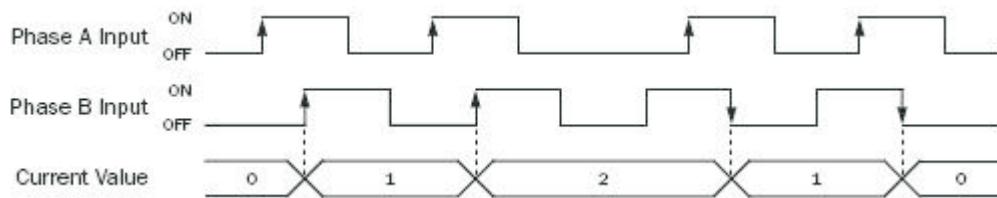
The count value is reset to 0 when the reset input comes ON. The preset value can be changed by writing the data into the preset register while soft-gate is ON/OFF. The count value range is 0 to 4294967295 (32-bit data).

For example, to configure the HSC in quadrature bi-pulse mode, follow the steps defined for single phase counter (9.2) with the change in the value of configuration register as 3.

This function counts up or down the quadrature bi-pulse.

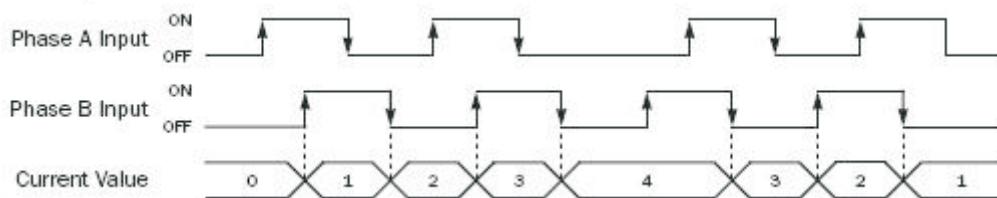
a) 1-edge count:

The current value increments or decrements at the rising or falling edge of the phase B input after the phase A input has turned on as shown below:



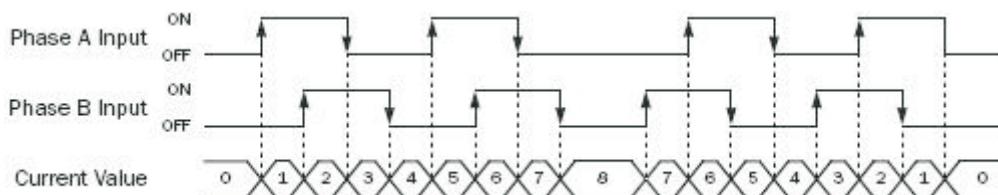
b) 2-edge Count:

The current value increments or decrements at the rising or falling edge of the phase B input after the phase A input has turned on or off as shown below:



c) 4-edge Count:

The current value changes (raise or decrease) at the rising or falling edges of the phase A and B inputs as shown below:



Both rising and falling edges of each phase are counted.

Consequently, 4 times count value against the pulse frequency is obtained.

Related registers:

Function	Register / device		Remarks
	Pair 1 X0 and X5	Pair 2 X2 and X7	
Phase A	X0	X2	Count Input channels
Phase B	X5	X7	
Reset input	X1	X3	Physical reset i/p channels
Count Value	MW0101 MW0102	MW0113 MW0114	Data range: H0000 0000 to HFFFF FFFF
Preset	MW0103 MW0104	MW0115 MW0116	Set count value: Max. 4294967295
Soft gate	M01080	M01272	Operation is enabled when bit ON
Reset Bit	M01081	M01273	Used to reset the counter value
Preset reached Bit	M01083	M01275	This bit turns on, when counter reaches to preset register value

## 10.5 MW register table for HSC expansion I/O Module

High speed inputs:

Number of inputs: 4

Input channels: X0, X5, X2, X7

MW Type	Expansion Slot 1			
	CH1	CH2	CH3	CH4
HSC Configuration register	MW0100	MW0106	MW0112	MW0118
High Speed Counter (HSC) Register	MW0101 MW0102	MW0107 MW0108	MW0113 MW0114	MW0119 MW0120
HSC Preset Register	MW0103 MW0104	MW0109 MW0110	MW0115 MW0116	MW0121 MW0122
HSC Enable Bit	MW0105_0 (M01080)	MW0111_0 (M01176)	MW0117_0 (M01272)	MW0123_0 (M01368)
HSC Reset Bit	MW0105_1 (M01081)	MW0111_1 (M01177)	MW0117_1 (M01273)	MW0123_1 (M01369)
HSC Preset Reached	MW0105_3 (M01083)	MW0111_3 (M01179)	MW0117_3 (M01275)	MW0123_3 (M01371)

MW Type	Expansion Slot 2			
	CH1	CH2	CH3	CH4
HSC Configuration register	MW0200	MW0206	MW0212	MW0218
High Speed Counter (HSC) Register	MW0201 MW0202	MW0207 MW0208	MW0213 MW0214	MW0219 MW0220
HSC Preset Register	MW0203 MW0204	MW0209 MW0210	MW0215 MW0216	MW0221 MW0222
HSC Enable Bit	MW0205_0 (M02080)	MW0211_0 (M02176)	MW0217_0 (M02272)	MW0223_0 (M02368)
HSC Reset Bit	MW0205_1 (M02081)	MW0211_1 (M02177)	MW0217_1 (M02273)	MW0223_1 (M02369)
HSC Preset Reached	MW0205_3 (M02083)	MW0211_3 (M02179)	MW0217_3 (M02275)	MW0223_3 (M02371)

MW Type	Expansion Slot 3			
	CH1	CH2	CH3	CH4
HSC Configuration register	MW0300	MW0306	MW0312	MW0318
High Speed Counter (HSC) Register	MW0301 MW0302	MW0307 MW0308	MW0313 MW0314	MW0319 MW0320
HSC Preset Register	MW0303 MW0304	MW0309 MW0310	MW0315 MW0316	MW0321 MW0322
HSC Enable Bit	MW0305_0 (M03080)	MW0311_0 (M03176)	MW0317_0 (M03272)	MW0323_0 (M03368)
HSC Reset Bit	MW0305_1 (M03081)	MW0311_1 (M03177)	MW0317_1 (M03273)	MW0323_1 (M03369)
HSC Preset Reached	MW0305_3 (M03083)	MW0311_3 (M03179)	MW0317_3 (M03275)	MW0323_3 (M03371)

MW Type	Expansion Slot 4			
	CH1	CH2	CH3	CH4
HSC Configuration register	MW0400	MW0406	MW0412	MW0418
High Speed Counter (HSC) Register	MW0401 MW0402	MW0407 MW0408	MW0413 MW0414	MW0419 MW0420
HSC Preset Register	MW0403 MW0404	MW0409 MW0410	MW0415 MW0416	MW0421 MW0422
HSC Enable Bit	MW0405_0 (M04080)	MW0411_0 (M04176)	MW0417_0 (M04272)	MW0423_0 (M04368)
HSC Reset Bit	MW0405_1 (M04081)	MW0411_1 (M04177)	MW0417_1 (M04273)	MW0423_1 (M04369)
HSC Preset Reached	MW0405_3 (M04083)	MW0411_3 (M04179)	MW0417_3 (M04275)	MW0423_3 (M04371)

MW Type	Expansion Slot 5			
	CH1	CH2	CH3	CH4
HSC Configuration register	MW0500	MW0506	MW0512	MW0518
High Speed Counter (HSC) Register	MW0501 MW0502	MW0507 MW0508	MW0513 MW0514	MW0519 MW0520
HSC Preset Register	MW0503 MW0504	MW0509 MW0510	MW0515 MW0516	MW0521 MW0522
HSC Enable Bit	MW0505_0 (M05080)	MW0511_0 (M05176)	MW0517_0 (M05272)	M0W523_0 (M05368)
HSC Reset Bit	MW0505_1 (M05081)	MW0511_1 (M05177)	MW0517_1 (M05273)	M0W523_1 (M05369)
HSC Preset Reached	MW0505_3 (M05083)	MW0511_3 (M05179)	MW0517_3 (M05275)	MW0523_3 (M05371)

*Note: HSC Configuration register, High Speed Counter Register and HSC Preset register will be retained at power down for all channels.*

## **PWM OUTPUT**

In this chapter. . . .

- \* Configuring high speed outputs
- \* CW/CCW mode
- \* Pulse / DIR Mode
- \* Fixed pulse output (Trapezoidal)

This chapter is applicable for models FPED-HS-0808N, FPED-HS-0808P, FPED-HS-0808RN and FPED-HS-0808RP.

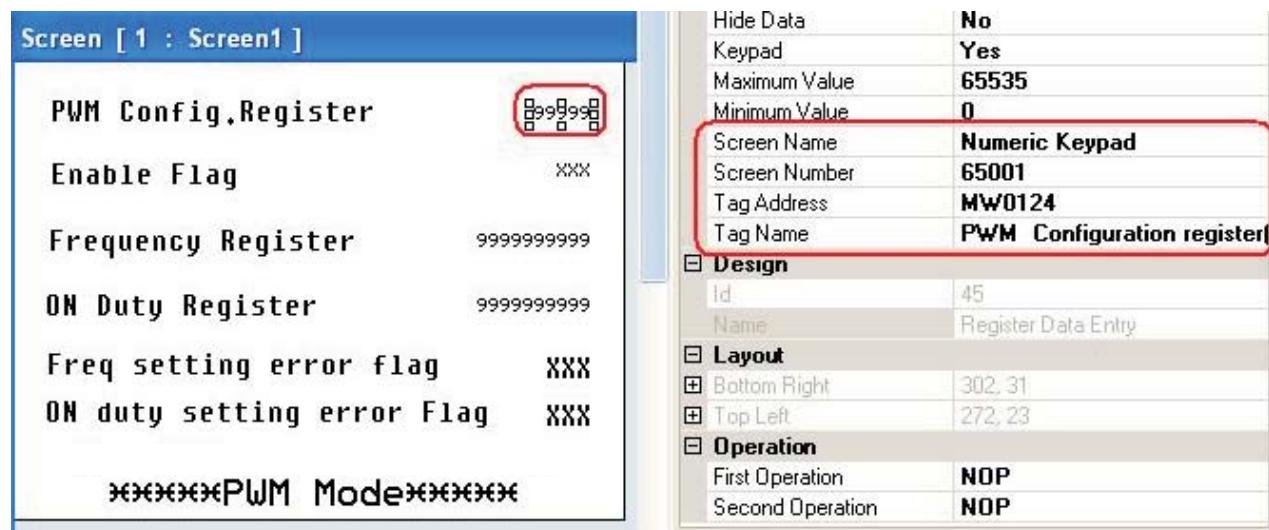
This chapter explains you to configure and use the High Speed outputs (PWM) in various mode. The high speed expansion models have a 1 PWM outputs [Y2 (Pulse), Y4 (Direction)].

This function is used to output a variable duty cycle pulse train. The controllable duty cycle is 10 to 100 % (1 % units). The PWM output is enabled when the pulse enable flag is ON. While the pulse enable flag is ON, the duty cycle (ON duty) can be changed by changing the duty setting value (10 to 100). The frequency setting is available in the range of 1 to 10000 Hz (1Hz units) before turning ON the pulse enable flag. The frequency changing is not allowed while the pulse enable is ON. Note that the minimum ON/OFF pulse duration is 100 ms. Therefore; the controllable ON duty range is limited depending on the frequency setting as follows. If the ON duty setting value is not available (within 10 to 100), the pulse width error flag comes ON. (PWM output operation is continued but the duty cycle is not guaranteed)

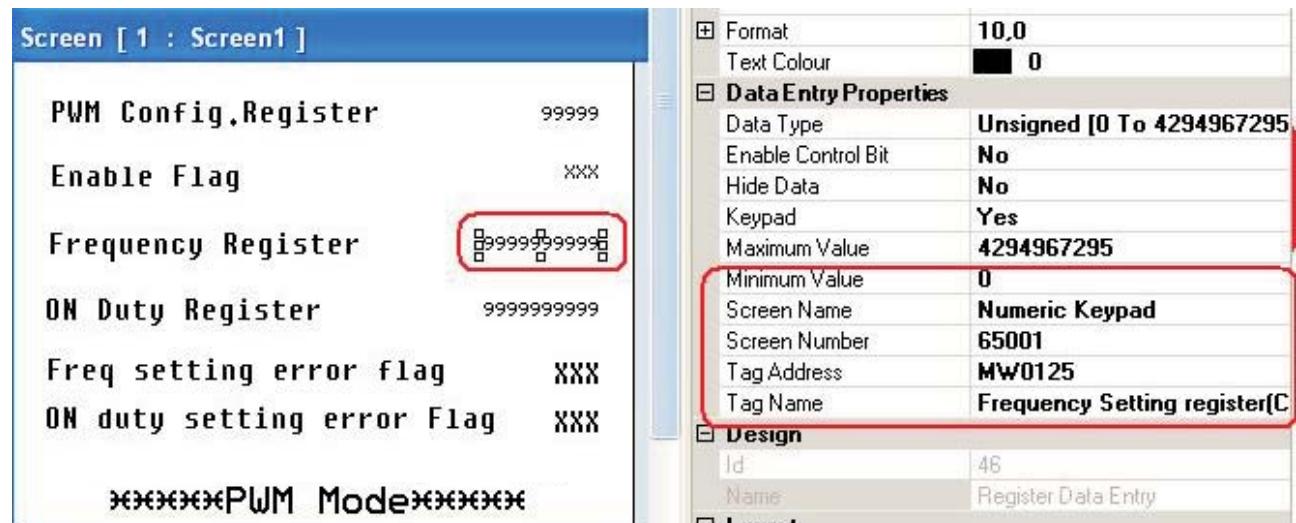
## 11.1 Configuring PWM Output in normal mode

For example, to configure high speed output in normal mode follow the steps given below:

- 1) Create a new application.
- 2) Add expansion FPED-HS-0808N in slot1
- 3) Take 'PWM config register' on screen
- 4) Put value as 1 in 'PWM config register'



- 5) Take 'frequency setting register' on screen and put its value as '5000' (5KHz).



6) Take 'On duty setting register' on screen and put its value as '10%'

Format	10.0
Text Colour	Black
<b>Data Entry Properties</b>	
Data Type	Unsigned [0 To 4294967295]
Enable Control Bit	No
Hide Data	No
Keypad	Yes
Maximum Value	4294967295
Minimum Value	0
Screen Name	Numeric Keypad
Screen Number	65001
Tag Address	MW0127
Tag Name	ON duty setting register(CH1)
<b>Design</b>	
Id	47
Name	Register Data Entry
<b>Layout</b>	

7) Take enable flag register on screen and keep its status as 'ON'.

Off Text	Off
On Text	On
Text Colour	Black
<b>Data Entry Properties</b>	
Enable Control Bit	No
Keypad	Yes
Screen Name	Bit Keypad
Screen Number	65003
Tag Address	M01576
Tag Name	Pulse Enable Flag(CH1)- Slo
<b>Design</b>	
Id	12
Name	Coil Data Entry
<b>Layout</b>	
Bottom Right	302, 61
Top Left	284, 53

8) Take 'Frequency setting error flag' on screen

9) Take 'On duty setting error flag' on screen

<b>Display Data Properties</b>	
Tag Address	M01467
Tag Name	Frequency Setting error flag
<b>Layout</b>	
Bottom Right	302, 170
Top Left	278, 154

<b>Display Data Properties</b>	
Tag Address	M01466
Tag Name	ON duty setting error flag(CH
<b>Layout</b>	
Bottom Right	302, 195
Top Left	278, 179

10) Download application

This will RUN the operation in normal mode.

When enable flag is 'ON' then, pulse started to be out. Here user can edit duty cycle.

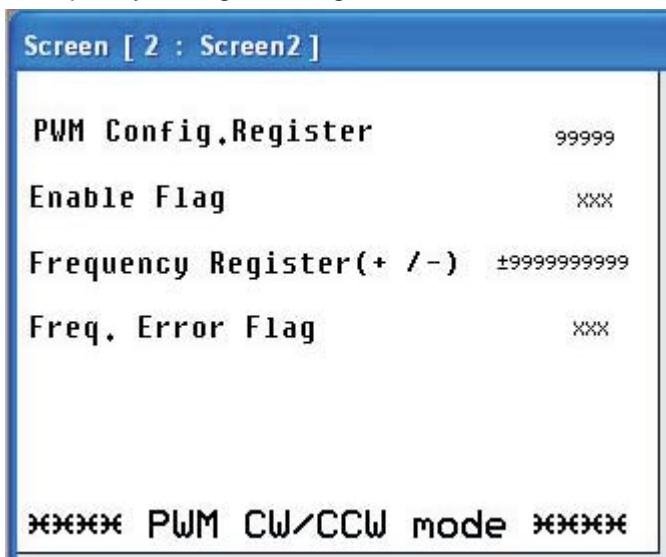
The function selection is done through below listed configuration register:

Function	Register / device Channel 1	Remarks
PWM pulse	Y2	
Pulse enable flag	M136_0	Output is enabled when ON
Frequency setting register	MW0125 MW0126	Data range: 1 to 10000
ON duty setting register	MW0127 MW0128	Data range: 0 to 100
Pulse width error flag	M129_1	ON at error (reset OFF automatically)
ON duty setting error flag	M129_2	ON at error (reset OFF automatically)
Frequency setting error flag	M129_3	ON at error (reset OFF automatically)

## 11.2 Configuring PWM Output in CW/CCW mode

For example, to configure high speed output in CW/CCW mode follow the steps given below:

- 1) Create a new application.
- 2) Add expansion FPED-HS-0808N in slot1
- 3) Take 'PWM config register' on screen
- 4) Put value as 3 in 'PWM config register'
- 5) Take 'frequency setting register' on screen and put its value as '+5000'
- 6) Take enable flag register on screen and keep its status as 'ON'
- 7) Take 'Frequency setting error flag' on screen



- 8) Download application

This will RUN the operation in CW/CCW mode.

Note:

The value of 'Frequency setting register' should be in between +/-1 to +/-10,000  
If value of 'Frequency setting register' is less than 1 or greater than 10,000 then, frequency setting error flag will be 'ON' otherwise it will be OFF.

When CW/CCW mode is selected and if frequency data range is positive, match output 6(MR6) will be selected so that pulses will be out on Y2 and if frequency data range is negative, match output 1(MR1) will be selected so that pulses will be out on Y4.

Function	Register/device	Remarks
CW Pulse	Y2	
CCW Pulse	Y4	
Pulse enable flag	MW0136_0	Output is enabled when ON
Frequency setting register	MW0125 MW0126	Data range: -10000 to 1, 1 to 10000
Frequency setting error flag	MW0129_3	ON at error (Reset OFF automatically)

Timing diagram:

Fig.1 CW/CCW Timing diagram (Positive PWM frequency)

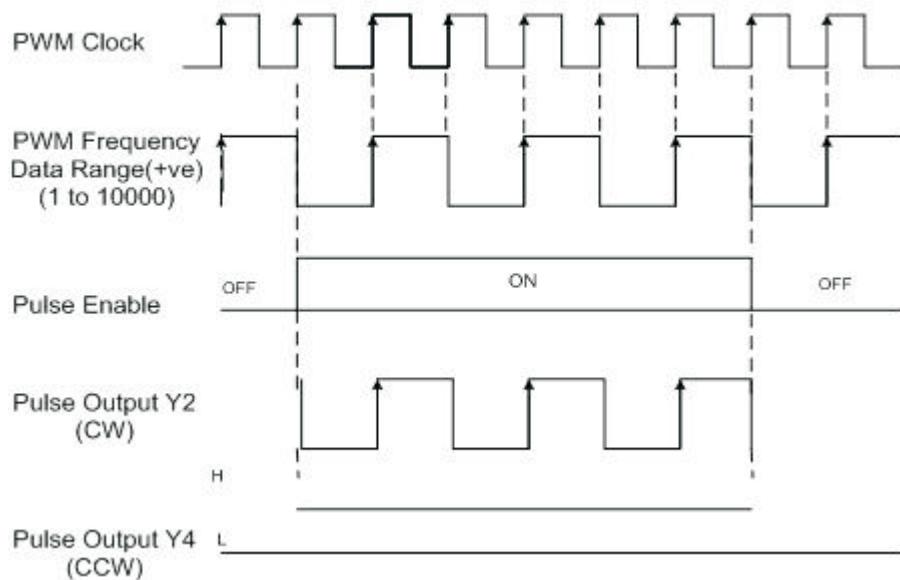
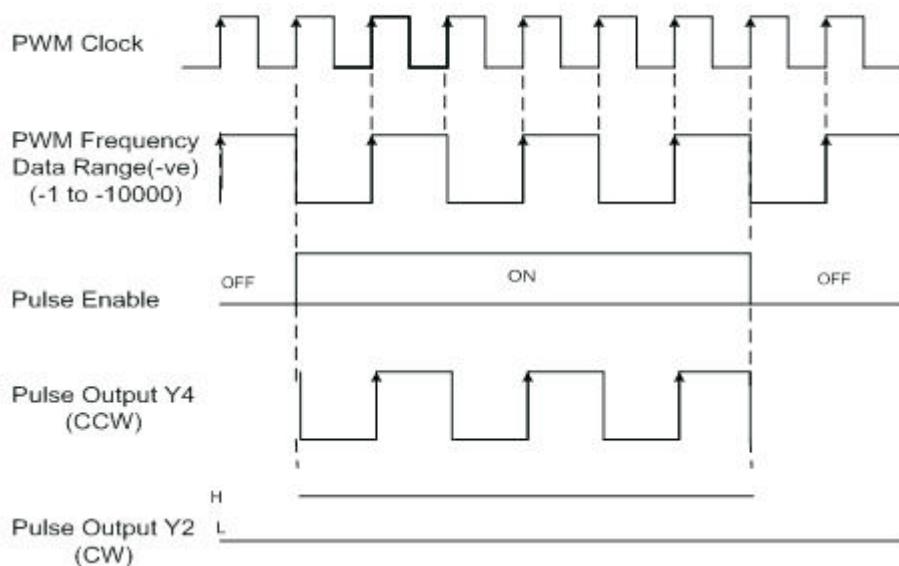


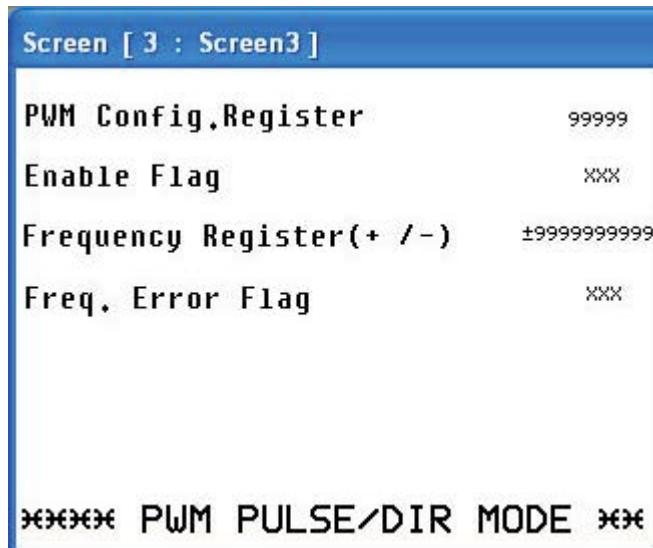
Fig.2 CW/CCW Timing diagram (Negative PWM frequency)



### 11.3 Configuring PWM Output in Pulse/DIR mode

For example, to configure high speed output in Pulse/DIR mode follow the steps given below:

- 1) Create a new application
- 2) Add expansion FPED-HS-0808N in slot1
- 3) Take 'PWM config register' on screen
- 4) Put value as 7 in 'PWM config register'
- 5) Take 'frequency setting register' on screen and put its value as '+5000'
- 6) Take enable flag register on screen and keep its status as 'ON'
- 7) Take 'Frequency setting error flag' on screen



- 8) Download application

This will RUN the operation in Pulse/DIR mode.

Note:

The value of 'Frequency setting register' should be in between +/-1 to +/-10,000. If value of 'Frequency setting register' is less than 1 or greater than 10,000 then, frequency setting error flag will be 'ON' otherwise it will be OFF.

In PULSE/DIR mode the pulses will be out on Y2 i.e. Match output6 (MR6). If the frequency data range is negative then direction pin can be set to high through Match output 1(MR1).i.e. direction status can be out on Y4.

Function	Register/device	Remarks
PLS	Y2	
DIR	Y4	
Pulse enable flag	MW0136_0	Output is enabled when ON
Frequency setting register	MW0125 MW0126	Data range: -10000 to 1, 1 to 10000
Frequency setting error flag	MW0129_3	ON at error (Reset OFF automatically)

Timing Diagram

Fig.3 PULSE/DIR Timing diagram (Positive PWM frequency)

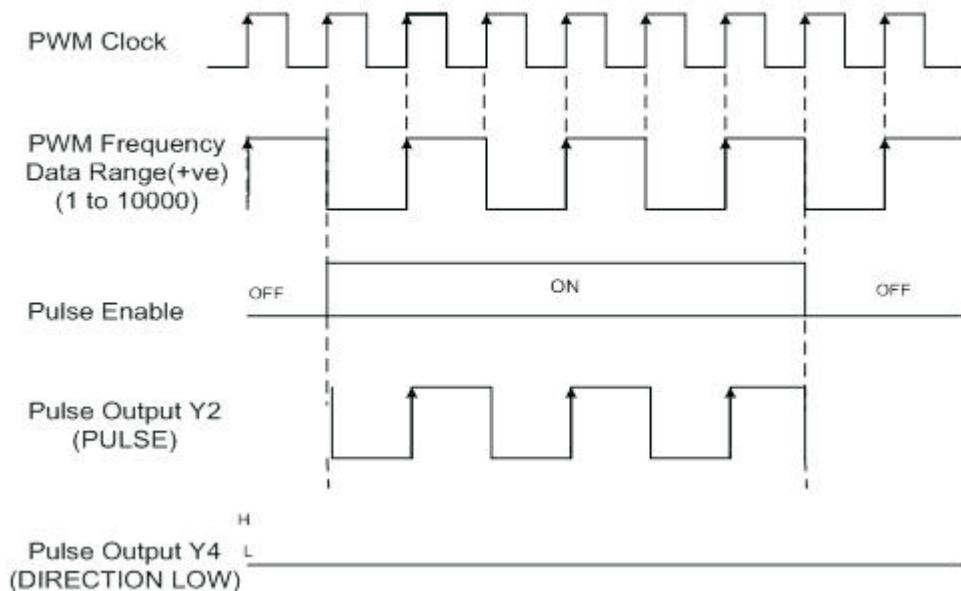
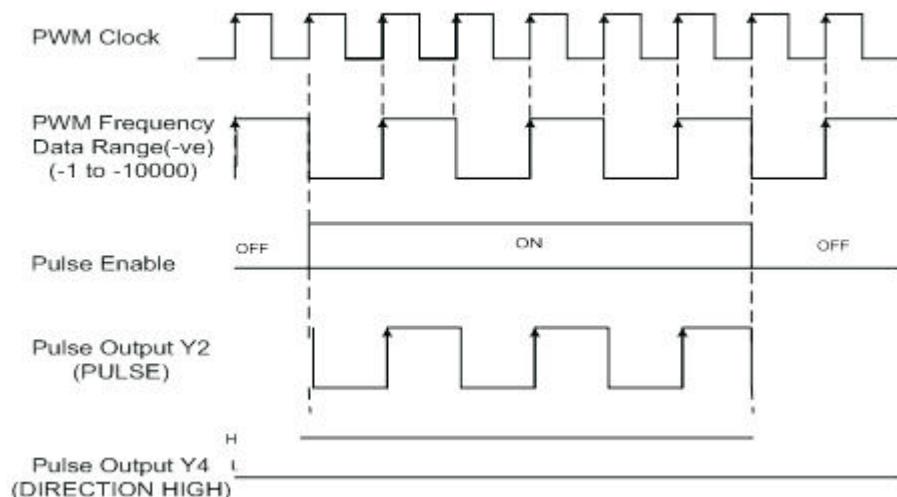


Fig.4 PULSE/DIR Timing diagram (Negative PWM frequency)



## 11.4 Configuring PWM Output in Fixed Pulse mode

For example, to configure high speed output in Fixed pulse mode (Trapezoidal / soft start) follow the steps given below:

- 1) Create a new application
- 2) Add expansion FPED-HS-0808N in slot1
- 3) Take 'PWM config register' on screen
- 4) Put value as 9 in 'PWM config register'
- 5) Take 'Minimum frequency setting register' on screen and put its value as '4'
- 6) Take 'Maximum frequency setting register' on screen and put its value as '100'
- 7) Take 'Acceleration time register' and set it value as 32000
- 8) Take 'Deceleration time register' and set it value as 32000
- 9) Take 'Total pulse count' register and set value as 5000
- 10) Take elapsed time on screen

Screen [ 4 : Screen4 ]	
PWM Config. Reg	99999
Enable Flag	XXX
Min. Frequency	9999999999
Max. Frequency	9999999999
Acceleration Time	99999
Deceleration Time	99999
Total Pulse Count	9999999999
Elapsed time	9999999999
<b>*** FIXED PULSE MODE ***</b>	

- 11) Download application

This will RUN the operation in fixed pulse mode (trapezoidal / soft start).

Note:

Minimum frequency should be maximum 10,000.

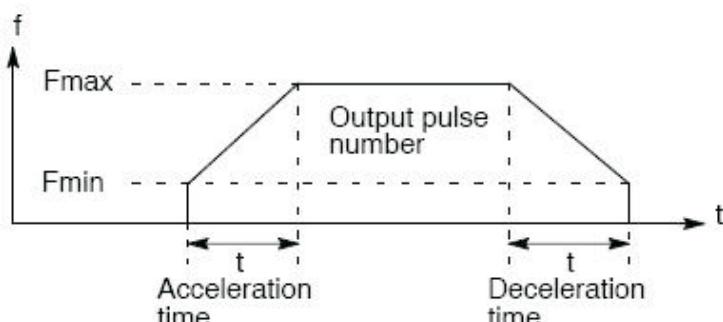
In this mode, fixed number of pulses can be output on the Y2 of expansion of transistor outputs of the unit according to the specified parameter.

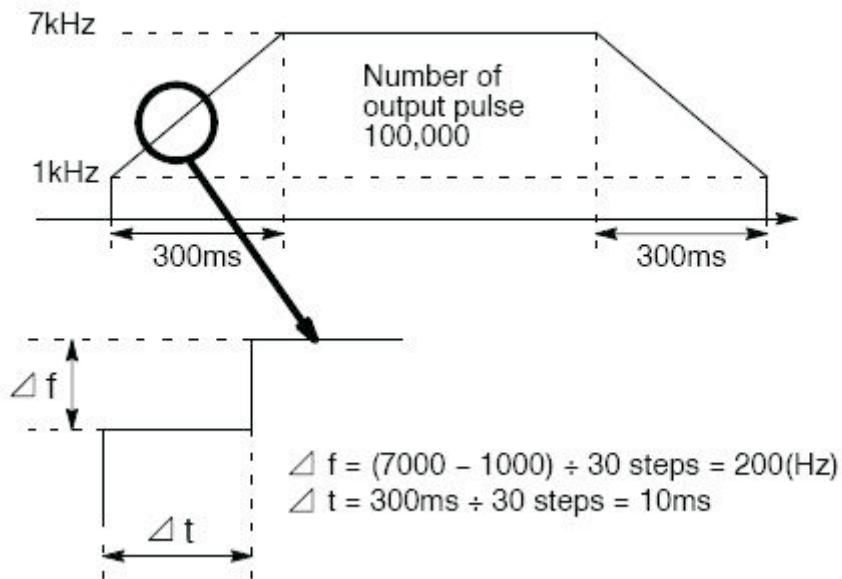
The function selection is done using Configuration register MW0124 (for Slot 1).

When the corresponding control flag is off and the execution condition (trigger) is in the on state, a pulse is output from the specified output (Y2).

The control code, minimum frequency, maximum frequency, acceleration time, deceleration time and total number of pulses are specified by a user program as shown in the following table.

The frequency is switched by the acceleration/deceleration time specified for changing from the initial speed to the maximum speed. The acceleration and deceleration is normally done in 30 steps.





MW Register Table:

Function	Register/device	Remarks
PWM pulse CH1	Y2	Expansion Y2
Configuration Register	MW0124	Fixed pulse mode configuration register
Pulse Out Enable	MW0136_0 (M01576)	Bit '0' is used for enable High speed output.
MIN Freq CH1	MW0125 MW0126	Data range: 1 to 10000
MAX Freq CH1	MW0127 MW0128	Data range: 1 to 10000
Acceleration Time CH1	MW0137	0 to 32767 (in mSec)
Deceleration Time CH1	MW0139	0 to 32767 (in mSec)
Total Pulse CH1	MW0141 MW0142	0 to + 2147483647
Elapsed value CH1	MW0145 MW0146	0 to + 2147483647 (Read / Write)
Frequency Setting Error Flag CH1	MW0129_3 (M01467)	Turns ON at error (Bit '2' of MW0129 register)
Acceleration Time Setting error flag	MW0129_4 (M01468)	Turns ON at error
Deceleration Time Setting error flag	MW0129_5 (M01469)	Turns ON at error
No of Total Pulses Setting error flag	MW0129_6 (M01470)	Turns ON at error
End of total pulses	MW0049_0 (M01784)	Turns ON at the end of pulses.

High speed outputs:

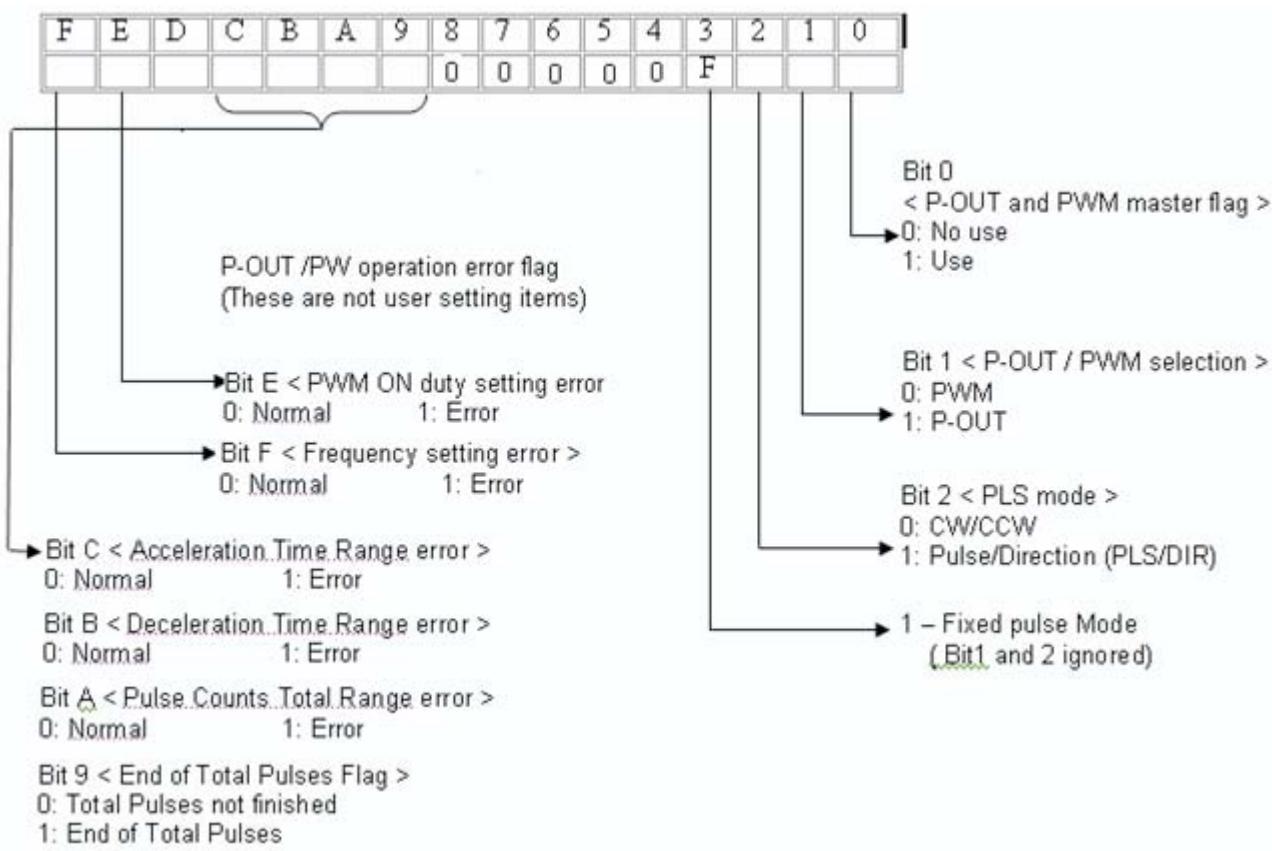
Number of outputs: 1

Output channels: Y2, Y4

MW Type	Expansion Slot 1	Expansion Slot 2	Expansion Slot 3
	CH1 (Y2)	CH1 (Y2)	CH1 (Y2)
Config. Register	MW0124	MW0224	MW0324
Frequency	MW0125	MW0225	MW0325
Setting register	MW0126	MW0226	MW0326
ON duty setting register	MW0127 MW0128	MW0227 MW0228	MW0327 MW0328
Pulse Enable Flag	MW0136_0 (M01576)	MW0236_0 (M02576)	MW0336_0 (M03576)
Pulse width error flag	MW0129_1 (M01465)	MW0229_1 (M02465)	MW0329_1 (M03465)
ON duty setting error flag	MW0129_2 (M01466)	MW0229_2 (M02466)	MW0329_2 (M03466)
Frequency setting error flag	MW0129_3 (M01467)	MW0229_3 (M02467)	MW0329_3 (M03467)
Acceleration Time Setting error flag	MW0129_4 (M01468)	MW0229_4 (M02468)	MW0329_4 (M03468)
Deceleration Time Setting error flag	MW0129_5 (M01469)	MW0229_5 (M02469)	MW0329_5 (M03469)
No of Total Pulses Setting error flag	MW0129_6 (M01470)	MW0229_6 (M02470)	MW0329_6 (M03470)
End of total pulses	MW0149_0 (M01784)	MW0249_0 (M02784)	MW0349_0 (M03784)

MW Type	Expansion Slot 4	Expansion Slot 5
	CH1 (Y2)	CH1 (Y2)
Config register Frequency	MW0424; MW0425	MW0524; MW0525
Setting register	MW0426	MW0526
ON duty setting register	MW0427; MW0428	MW0527; MW0528
Pulse Enable Flag	MW0436_0 (M04576)	MW0536_0 (M05576)
Pulse width error flag	MW0429_1 (M04465)	MW0529_1 (M05465)
ON duty setting error flag	MW0429_2 (M04466)	MW0529_2 (M04466)
Frequency setting error flag	MW0429_3 (M04467)	MW0529_3 (M04467)
Acceleration Time Setting error flag	MW0429_4 (M04468)	MW0529_4 (M04468)
Deceleration Time Setting error flag	MW0429_5 (M04469)	MW0529_5 (M04469)
No of Total Pulses Setting error flag	MW0429_6 (M04470)	MW0529_6 (M04470)
End of total pulses	MW0449_0 (M04784)	MW0549_0 (M05784)

Configuration register (Pulse/PWM Output): MWssrr



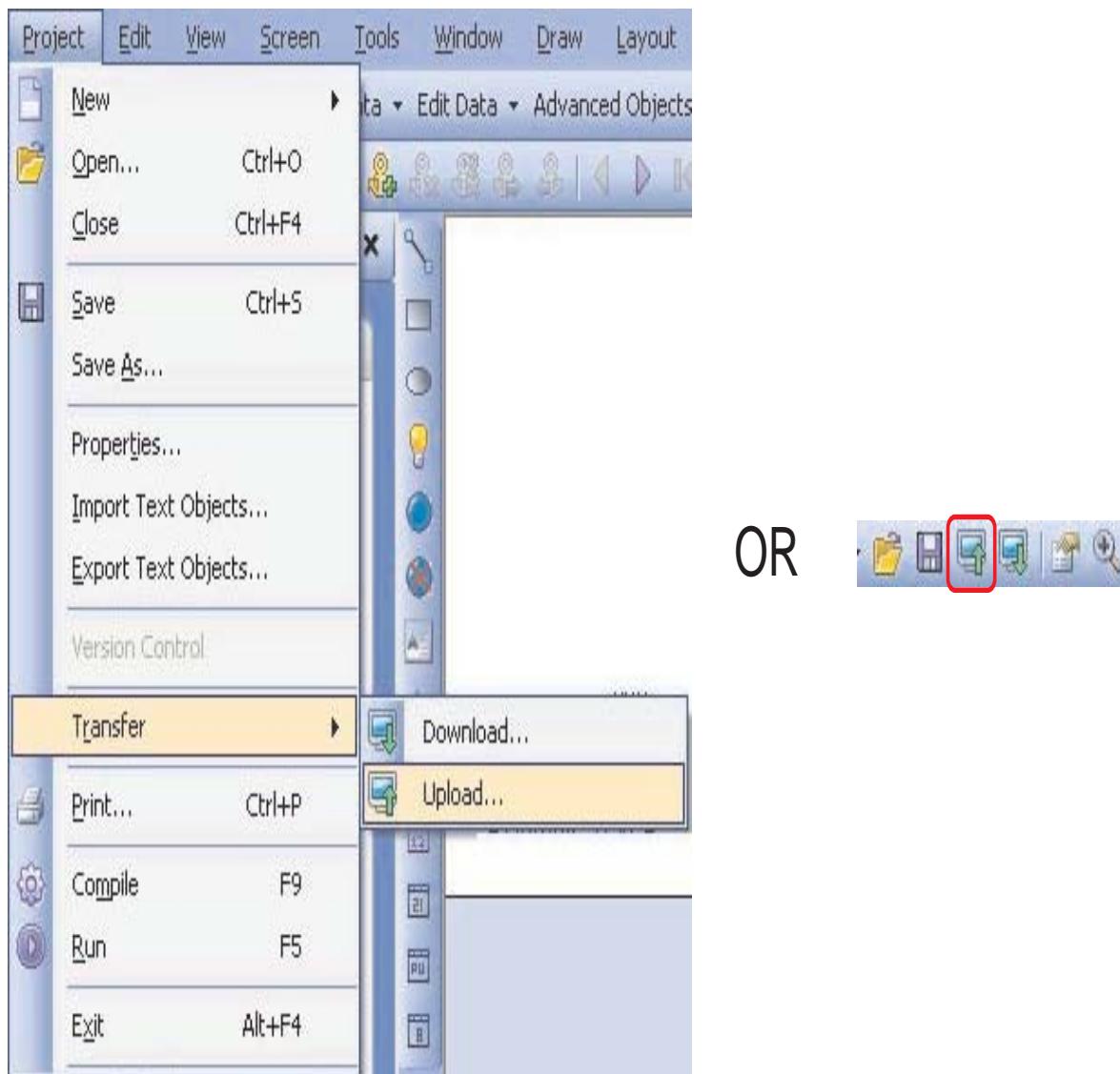
## **TRENDING**

In this chapter. . . .

- \* Real Time Trend
- \* Historical Trend
- \* Data Logging

## 12.1 Real Time Trend

This object is very useful for having a graphical representation of a tag against the real time. The real time is the time of the RTC of the unit. The tag value is plotted in Y-axis & the X-axis represents the time stamps.



### Trend Appearance

1. Background Color – User can define background color from color docker window.
2. Data Type – User can have tags of following data types representing values of meter object -
  1. Unsigned integer
  2. Signed integer
  3. Hexadecimal
  4. BCD
  5. Float
3. Error Message Font Color - Color of the error message to be displayed.

#### Error Message-

The trend object offers the unique feature of specifying the parameter values runtime in the unit by passing through a tag. The trend object does the value validation check runtime & if the values are found invalid then the message related to it, is shown in the message window to let the user know about it.

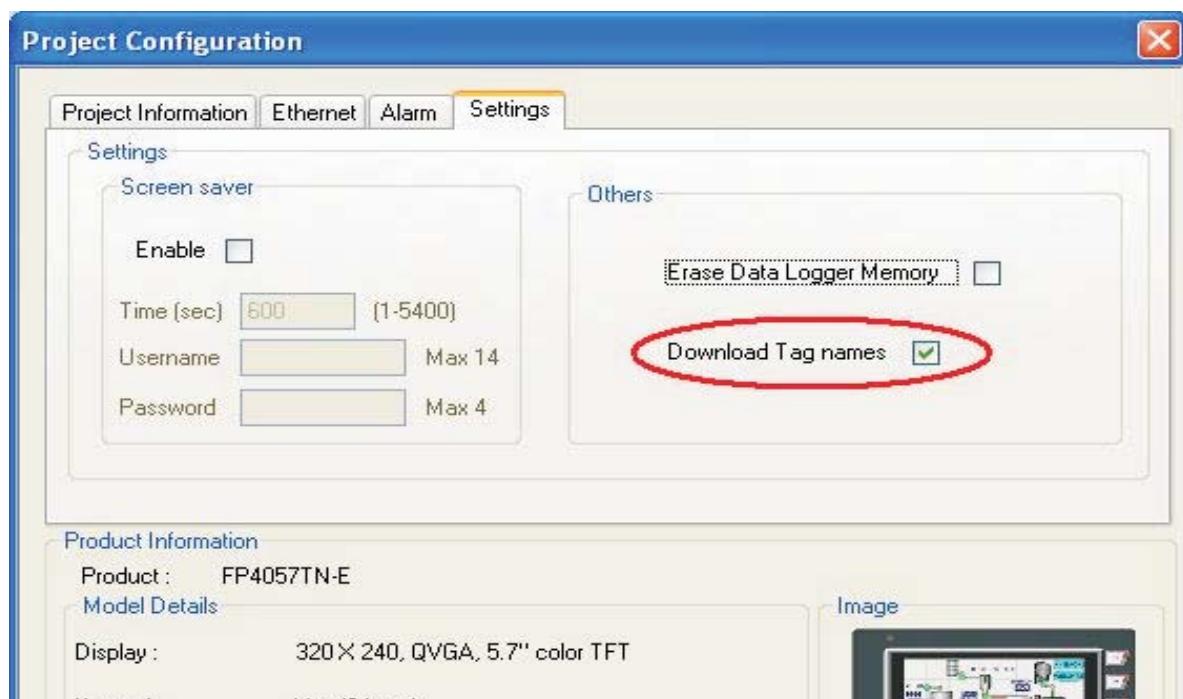
## Trend Appearance

4. Font – You can use font size of the text indicating trend parameters.  
 5. Grid – You can enable / disable grid  
 6. Grid Color – You can choose color of the grids [if enabled] on the trend object  
 7. Label – Parameters related to the trend label can be configured here if the Label selection is enabled. (Check box 'Label' is selected).



1. Text - Label text.
  2. Font - User can select windows® Font , Font Style and Font size.
  3. Language - Display the list of languages depending upon number of [languages configured](#) in the Unit Settings.
  4. Color - Color of the text.
8. Span Time – This indicated the value in seconds representing the interval on the X-axis, which is the real time axis.
9. Span time Tag – If this option is enabled then user can specify a tag [2 byte], which will correspond to value in seconds representing the interval on the X-axis. User can vary the value of this tag at run time from the unit & the trend will be readjusted accordingly.

## Tag Attributes



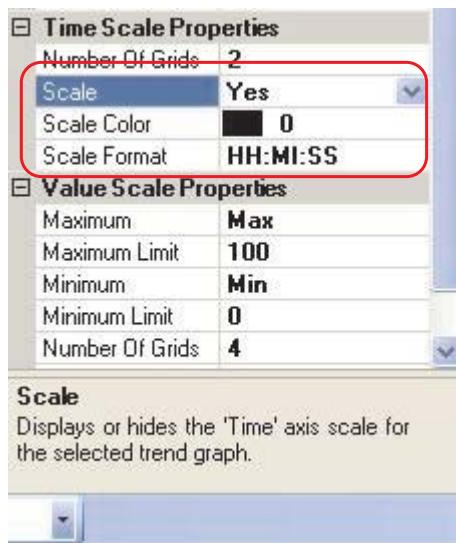
1. No.of Tags – User can assign upto 4 tags. You can defined the number of tags to be plotted.
2. Selected Tag Color – The color by which the trend for the tag is represented on the trend object.
3. Tag – Selects the tag to be configured. The 'Tag Attributes' properties should be independently configured for each tag.

### Tag Attributes

4. Tag Address – Here tag addresses are displayed which are defined for plotting.
5. Tag Name – This will automatically appears according to tag address.

### Time Scale Properties

1. Number of Grids – If the user enables grid option then he can select the number of grids on the Y-axis, which is the time scale. User can assign up to 10 grids on Y-axis
2. Scale – If the scale selection is enabled then the real time stamps are shown on the trend object along the time scale axis.



**Scale Format** - The time on the X-axis can be viewed in two different formats HH:MM:SS or HH:MM.

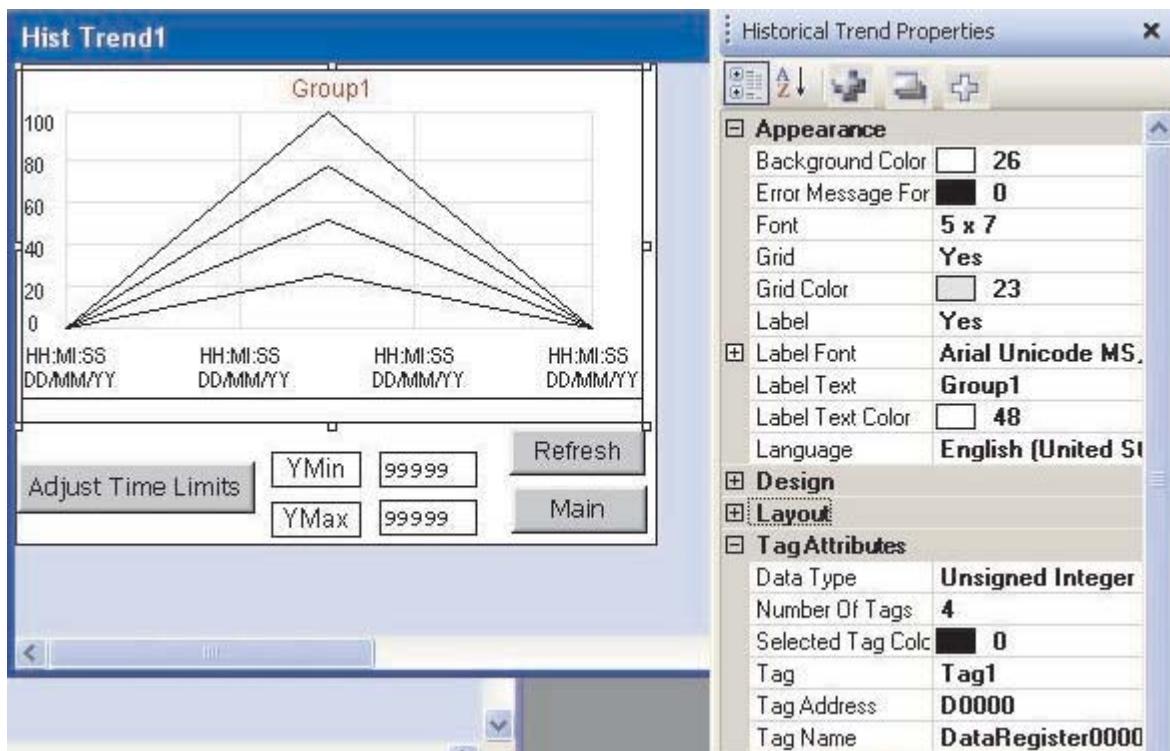
**Scale Color** - The color of the time stamp values represented on time scale.

### Value Scale Properties

1. Maximum – This indicates the higher limit on the Y-axis represented by the top most point on the Y-axis. The range is between 0 to 65535 for 2 byte integer.
2. Maximum Limit – If the user wants a tag to specify the higher limit at run time through a two byte tag then he can pass the predefined tag to the object.
3. Minimum – This indicates the lower limit on the Y-axis represented by the down most point on the Y-axis. The range is between 0 to 65535 for 2 byte integer.
4. Minimum Limit – If the user wants a tag to specify the lower limit at run time through a two byte tag then he can pass the predefined tag to the object.
5. No of Grids - If the user enables grid option then he can select the number of grids on the Y-axis, which is the value scale. He can assign up to 10 grids on Y-axis

## 12.2 Historical Trend

Historical Trending can be enabled only when data logging is enabled.



### Trend Appearance

1. Background Color – User can define background color from color docker window.
2. Error Message Font Color - Color of the error message to be displayed.

#### Error Message-

The trend object offers the unique feature of specifying the parameter values runtime in the unit by passing through a tag. The trend object does the value validation check runtime & if the values are found invalid then the message related to it, is shown in the message window to let the user know about it.

4. Font – You can use font size of the text indicating trend parameters.
5. Grid – You can enable / disable grid
6. Grid Color – You can choose color of the grids [if enabled] on the trend object
7. Label – Parameters related to the trend label can be configured here if the Label selection is enabled. (Check box 'Label' is selected).
  1. Text - Label text.
  2. Font -User can select windows® Font , Font Style and Font size.
  3. Language - Display the list of languages depending upon number of [languages configured](#) in the Unit Settings.
  4. Color - Color of the text.

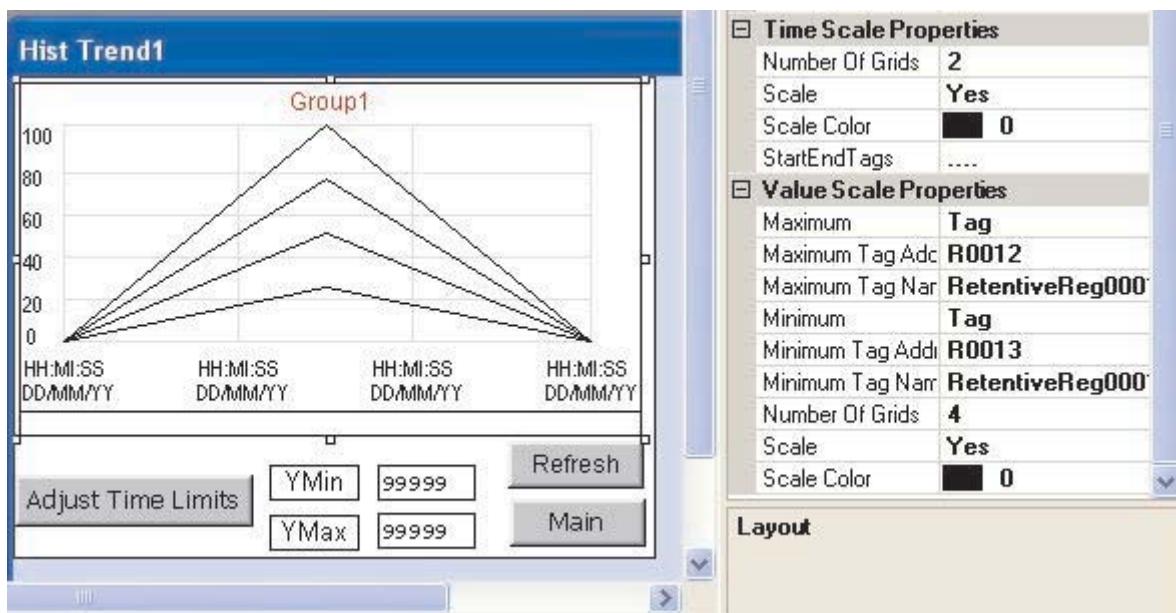
### Tag Attributes

1. Data Type – User can have tags of following data types representing values of trend object:
  1. Unsigned integer
  2. Signed integer
  3. Hexadecimal
  4. BCD
  5. Float

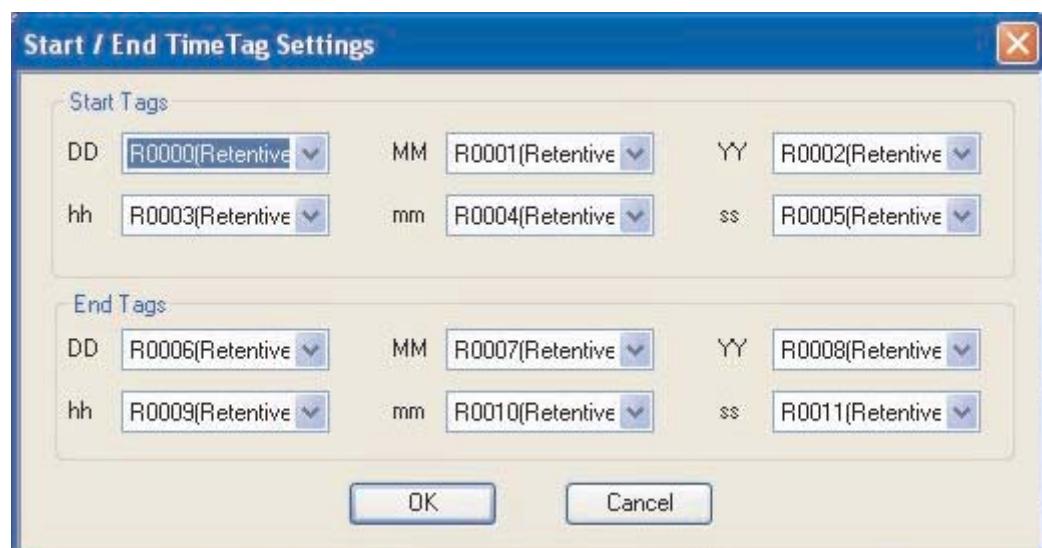
### Tag Attributes

2. Number of Tags - This selection box allows user to select the number of tags to be plotted using selected trend object from the logged tags. Maximum value can be four for single trend object.
3. Selected Tag Color - The color by which the trend for the tag is represented on the trend object.
4. Tag - Selects the tag to be configured. The 'Tag Attributes' properties should be independently configured for each tag.
5. Tag Address – User can specify tag address here.
6. Tag Name – This will automatically appears according to tag address.

### Time Scale Properties



1. Number Of Grids - If the user enables grid option then he can select the number of grids on the X-axis, which is the time scale. He can assign up to 10 grids on X-axis.
2. Scale - If the scale selection is enabled then the real time stamps are shown on the trend object along the time scale axis.
3. StartEndTags - **Scale Color** - The color of the time stamp values represented on time scale.  
Start / End Time Tags



## Time Scale Properties

### Start / End Time Tags:

This dialog box allows user to set the start time of the tag with respect to Day, Month, Year along with Hours, Minutes and Seconds and the End time of the tag with respect to the Day, Month, Year along with the Hours, Minutes and Seconds.

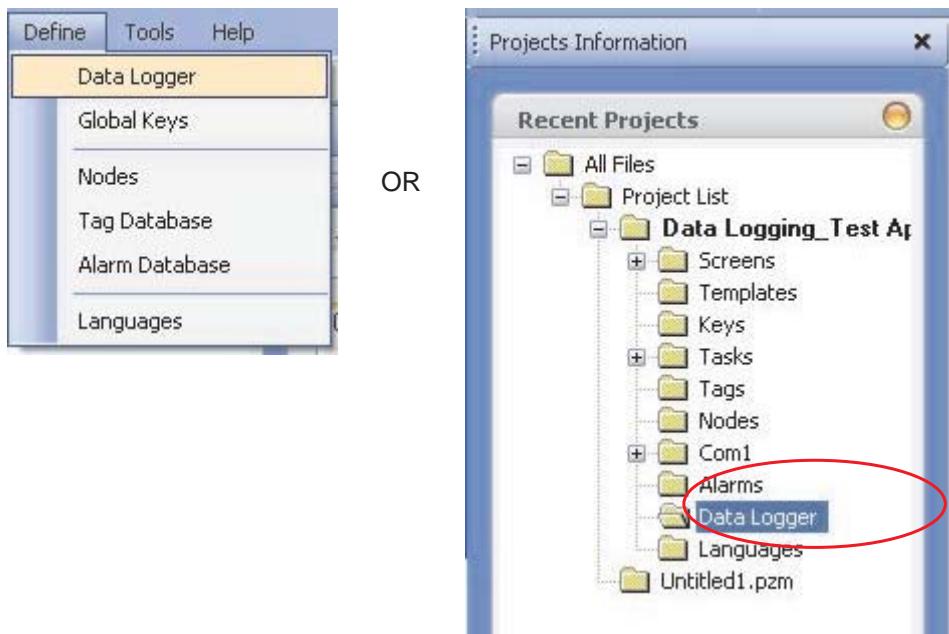
## Value Scale Properties

1. Maximum - This indicates the higher limit on the Y-axis represented by the top most point on the Y-axis. The range is between 0 to 65535.
2. Maximum tag address- If the user wants a tag to specify the higher limit at run time through a two byte tag then he can pass the predefined tag to the object.
3. Maximum tag Name - This will be changing with respect to tag address defined as maximum.
4. Minimum - This indicates the lower limit on the Y-axis represented by the down most point on the Y-axis. The range is between 0 to 65535.
5. Minimum tag address- If the user wants a tag to specify the lower limit at run time through a two byte tag then he can pass the predefined tag to the object.
6. Minimum tag Name - This will be changing with respect to tag address defined as minimum.
7. Number Of Grids - If the user enables grid option then he can select the number of grids on the Y-axis, which is the value scale. He can assign up to 10 grids on Y-axis.
8. Scale - If the scale selection is enabled then the value scale stamps are shown on the trend object along the time scale axis.
9. Scale Color - The color of the “value scale” stamp values represented on scale.

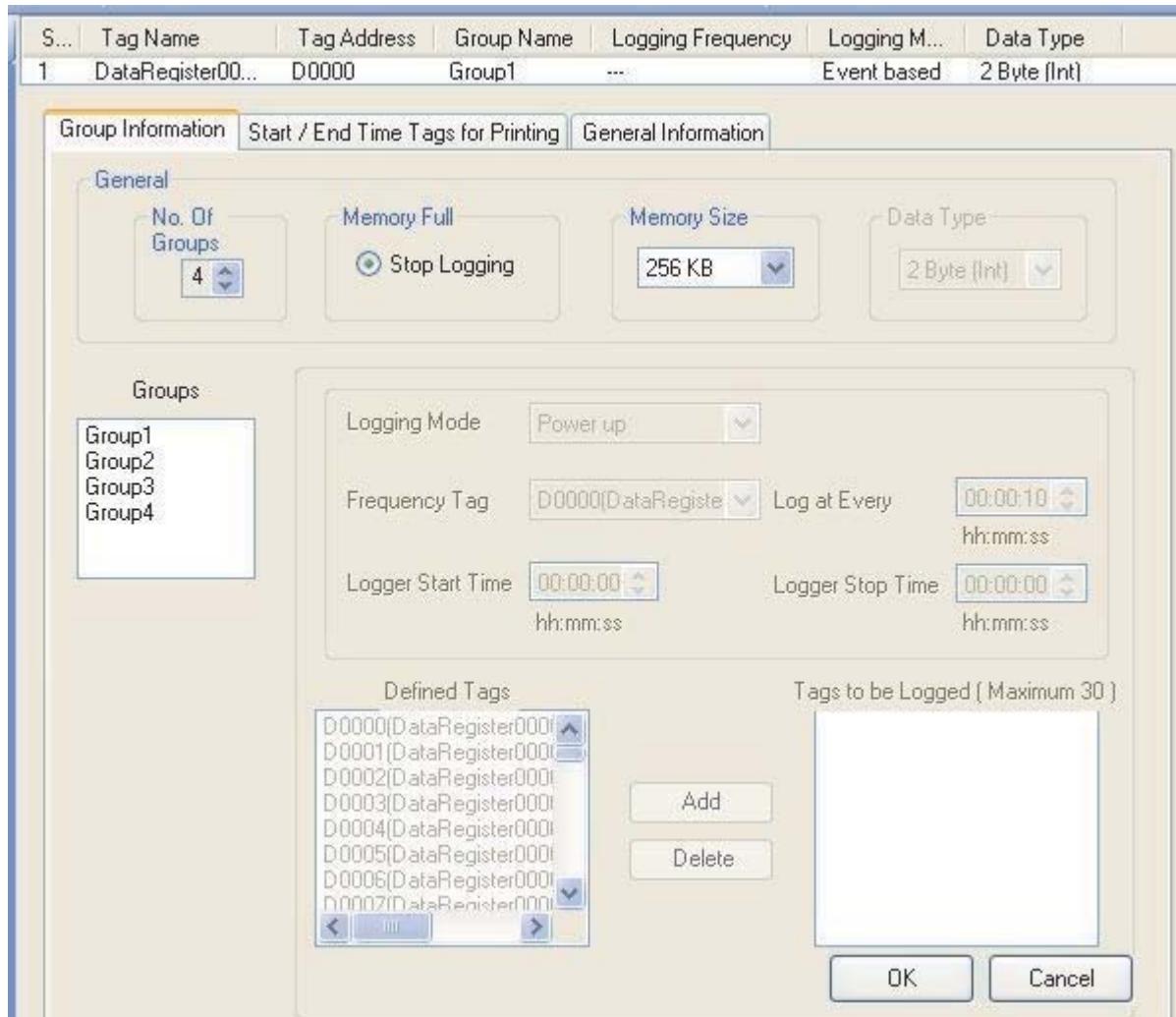
### 12.3 Data Logger

The Data Logger can be used to record the values of tags over time. The data can be viewed using the Historical Trend Object. It can also be uploaded to a computer for analysis.

The Data Logger can be opened from either by choosing **Define | Data Logger** menu option or from the Project tool bar as shown below.



The data logger window is shown below:



**General Settings For All Groups:**

**Number of Logger groups:** In this feature we can define maximum four groups for the data logging, which are having different logging mode. **Data Type of Log Data:**

User can log only following type of data

- (i) 2 Byte Integer
- (ii) 4 Byte Integer
- (iii) 4 Byte Float

**After Memory is full; action to be taken as:**Stop Logging:

The logger will stop logging new data when the specified memory limit given for it will be completely filled.

**Logger memory size:**

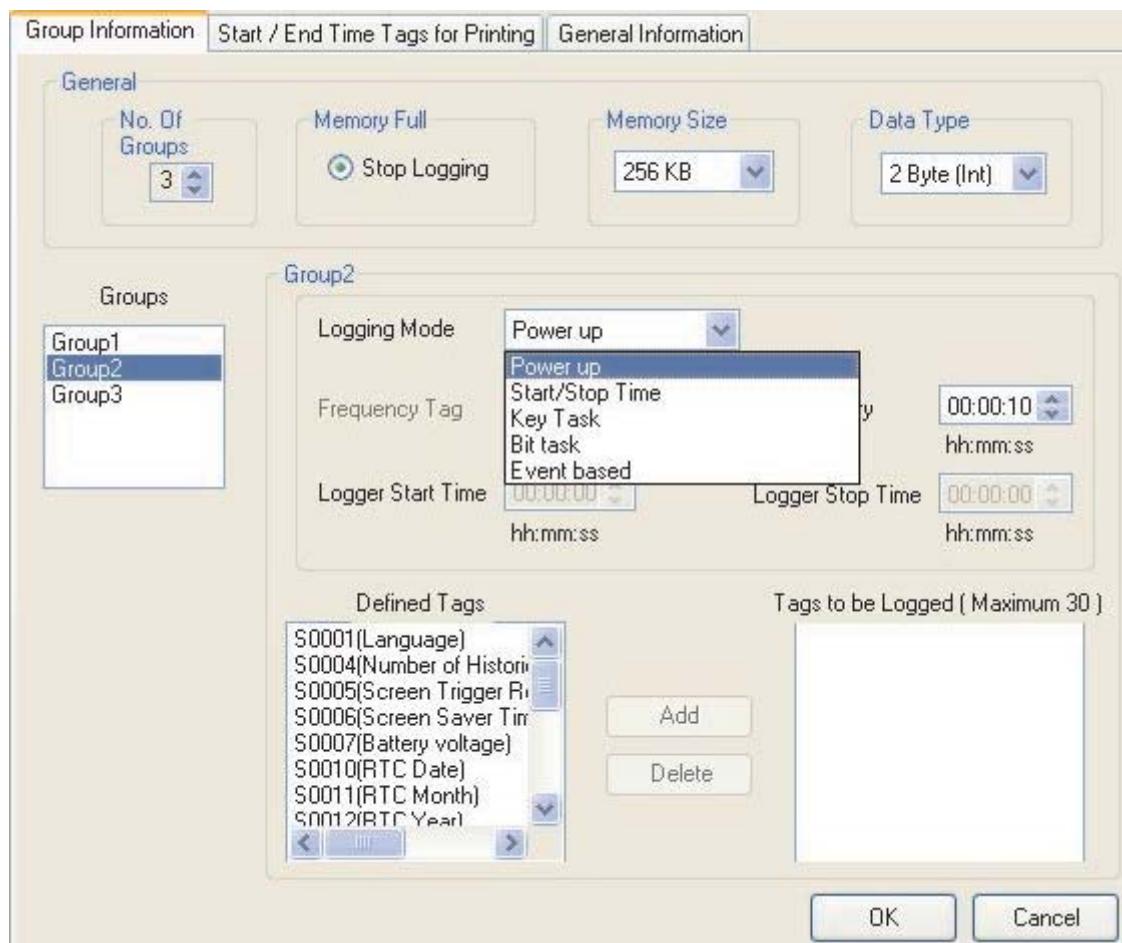
For ARGOS FP models:

- (i) 256 Kb
- (ii) 512 Kb
- (iii) 1024 Kb
- (iv) 2048 Kb

Note 1: - All the settings chosen -Memory size, Data Type of logger tags, and Action after memory full -will be common for all groups

Note 2: - Any type of change in settings will require previous logged data in unit to be erased.

A group specific setting is given below:



**Logging Mode:**

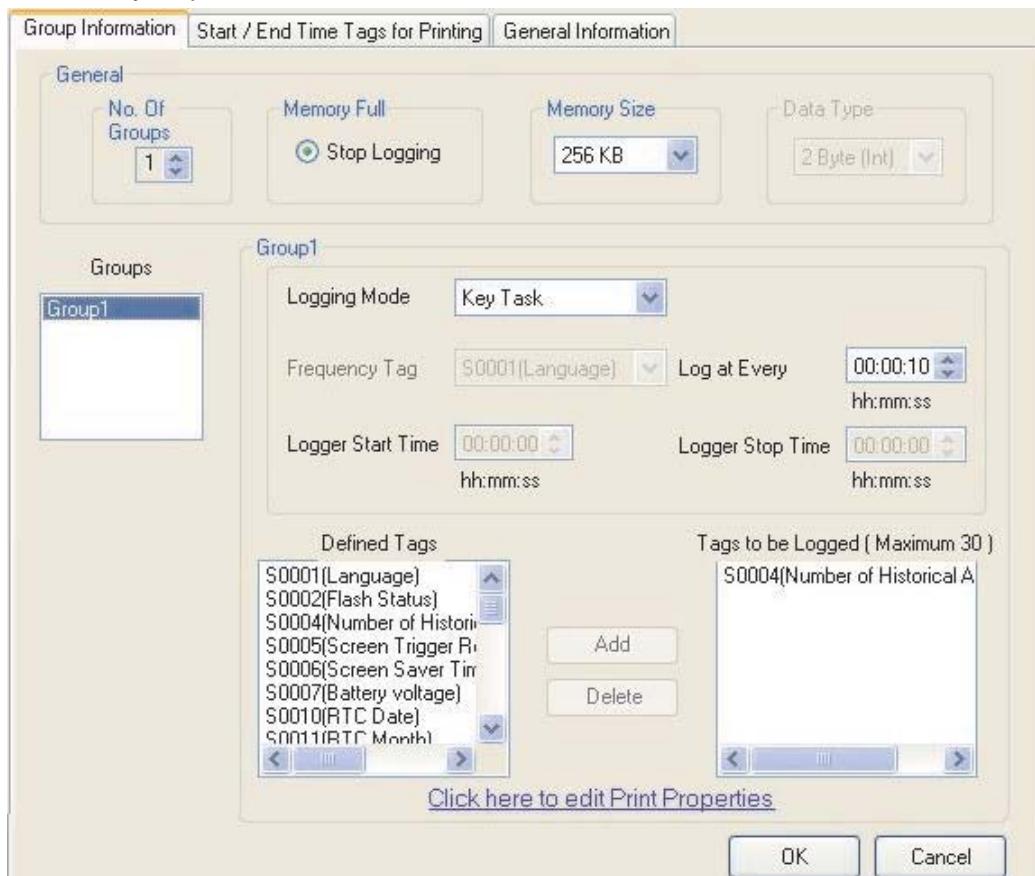
There are different five modes. User can choose one of the groups dragged as:

(i) **Power Up:** The power on will start the logging for the defined tags for the group

(ii) **Start/Stop Time :**

The logging will start and stop depending on the values of "Start Time" and "Stop Time" provided by the user at configuration time. The values are provided in HH:MM:SS format.

(iii) **Key Task:** In this mode, data logging can be started and stopped using a bit button having the proper Key's Specific Tasks



The time interval for data is set in the 'Log at Every' window. This window is applicable for all the modes. The default time is 10 seconds.

Logger's Start time and Logger's Stop time windows are available only for the Start/ Stop time mode.

For each group, define the tags that should be logged.

For Key Task mode logging, bit buttons should be created to handle various logging needs. The Key Specific Tasks should be assigned to the button's task list.



(iv) **Bit Task:** A bit status will make the logging On and Off. The bits s27, s28, s29, s30 are assigned to group 1 to 4. The specific bit should be made on for the particular group.

(v) **Event based:**

1. Logging Bit: User can select the bit whose event should be considered for logging the specified tags. The logging bit is only Internal bits of FP unit memory. The bits which are defined in the application are shown in the drop-down box.
2. Logging Event: There will be three options for logging event based on which logging will be done.
  - a. Positive Edge: Whenever the Log Bit Transition will be from Low to High the data will be logged.
  - b. Negative Edge: Whenever the Log Bit Transition will be from High to Low the data will be logged.
  - c. Both Edges: If Log Bit will transit from Low to High or High to Low the data will be logged.

**“Log at every” parameter:**

	(0-23)	(0-59)	(0-59)
Log at every	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="1"/>
	hh	mm	ss

This is used to decide the time between to logs. This is applicable to only first four modes. In Event based mode logging depends on event occurred so this time is not taken into consideration. Minimum time between two logs can be 1-second.

**“Logger start time: parameter:**

Logging mode	Start/stop time	▼	
	(0-23)	(0-59)	(0-59)
Logger start time	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
	hh	mm	ss

This is used only for “Start/Stop time mode”. The start time of the logging is to be provided here. The time is in HH:MM:SS format.

**“Logger stop time” parameter:**

	(0-23)	(0-59)	(0-59)
Log at every	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="10"/>
	hh	mm	ss
	(0-23)	(0-59)	(0-59)
Logger stop time	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
	hh	mm	ss

This is used only for “Start/Stop time mode”. The stop time of the logging is to be provided here. The time is in HH:MM:SS format.

**"Defined Tags" parameter:**

The tags defined in the present application will be shown in this window. User can highlight the particular tag with a mouse click and by using "Add" button he can add the tags to the "Tags to be Logged" window.

**"Tags to be logged" window:**

By using "Add" and "Delete" button we can add or remove the tags respectively to be logged for particular group. Only the tags that are shown in this window will be logged for the specific group. Maximum 30 tags can be logged for a group.

To clear the logged data, and to assign keys for start and stop in Key specific task; user can use the Key's specific tasks window as shown below:



The following tags can be used to see the status of the logger memory:

1. S2 – Flash memory Status register.
2. S003\_00 – Flash memory full status bit. On when flash will become full.
3. S003\_01 – Flash memory clear status bit. On when flash will become clear.

## 12.4 Data Logger Printing

User can use this feature only if data logging is added in application.

To use this feature please go through following steps :

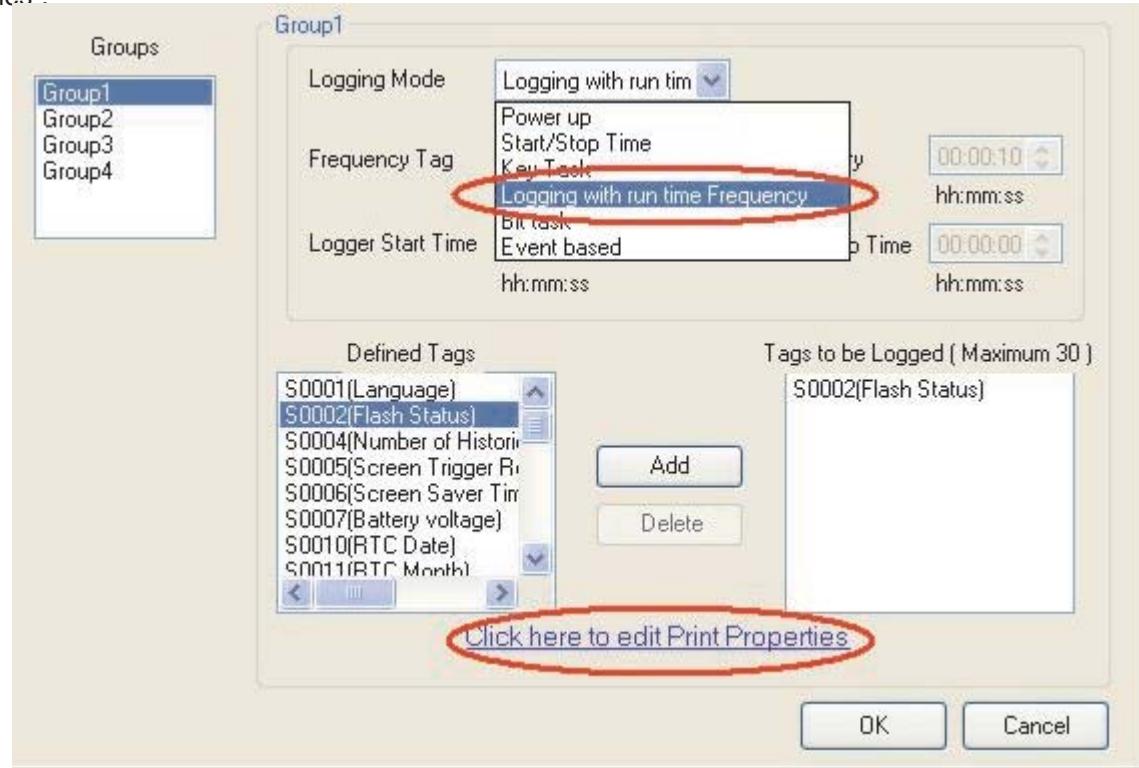
Example is given for single group. Log data printing for multiple group is also possible.

### Step 1: In Group Information

Select "Group1":

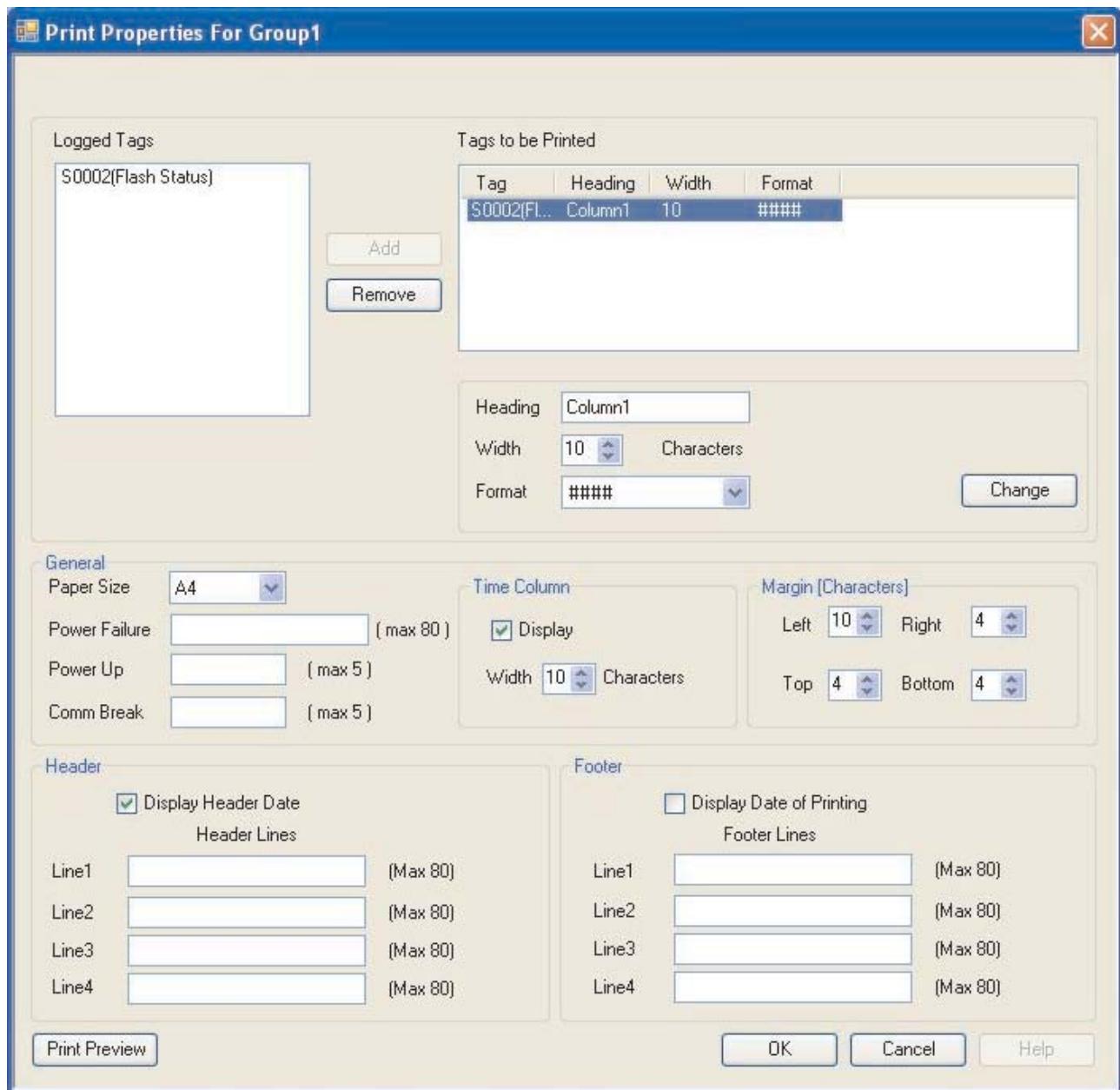
Select logging mode.

Make a list of tags to be logged. Here all tags should be of same size. Now user can go for " Print Properties".



*Note: This logging mode "Logging with run time Frequency" is only supported for "Group1".*

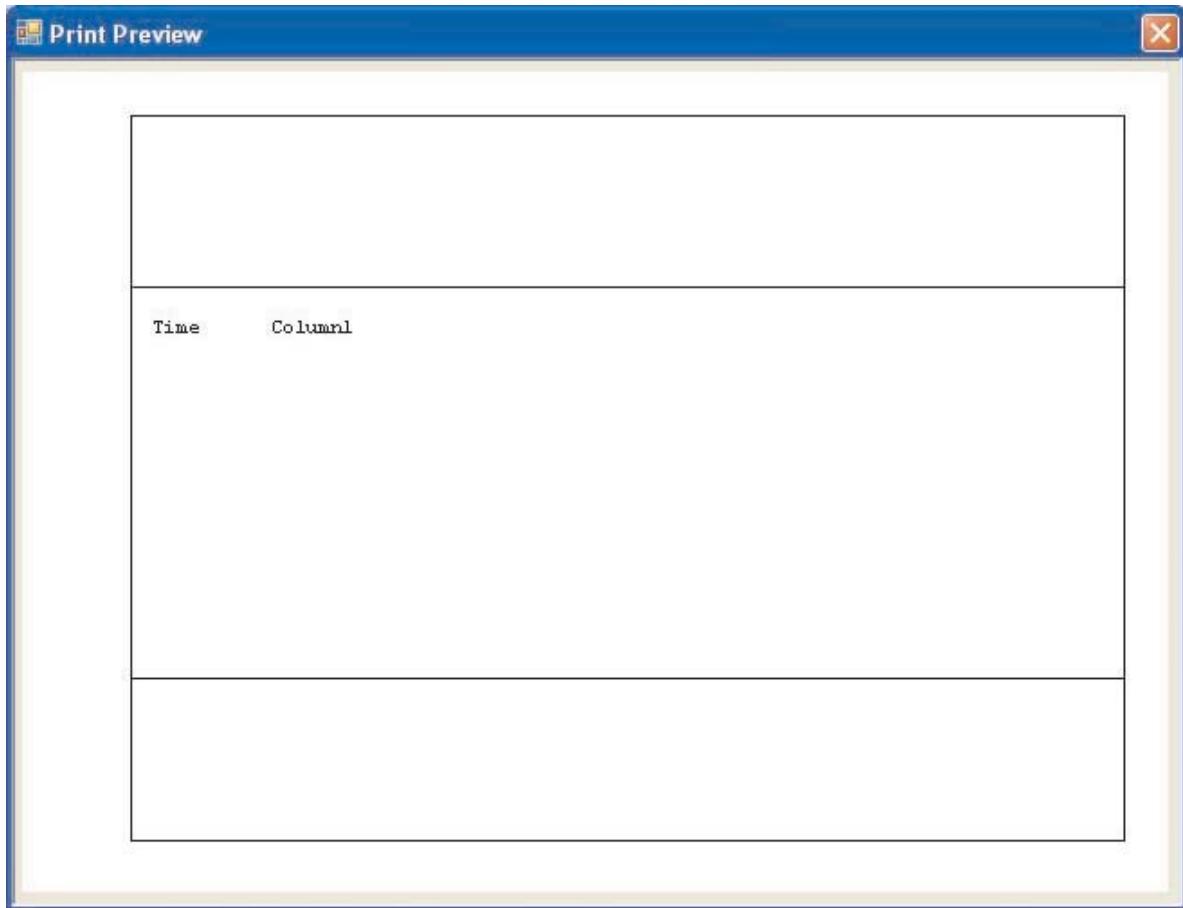
After click on "Print properties" below shown window will appear:



1. Logged tags: User can select any tag with any order from the Logged tag list for printing.
2. Tags to be printed: User can set the table properties by Column heading, column width and printing format of tag.
3. General:
  - Paper size is fixed to A4.
  - If unit is switched off for some duration, for that many intervals power failure message will print.
  - Power up characters will print with the first logged data after the unit gets power.
  - Communication break characters will print only with PLC tags. If there is no communication between PLC and unit then previously logged value is repeated for next time intervals with communication break character.
4. Time column: If user want to add time column in table , he can add it by selecting the check box.  
Enter sufficient column width to display Hr:Mn:sec.(00:00:00)
5. Margin (characters): This is related to paper margin for four sides in printer character size.
6. Header: User can give maximum 4 line header for each page. He can add Date of log data in header.

7. Footer: User can give maximum 4 line footer for each page. He can add Date and time of printing in footer.

8. Print Preview: User can see the print preview as shown below.



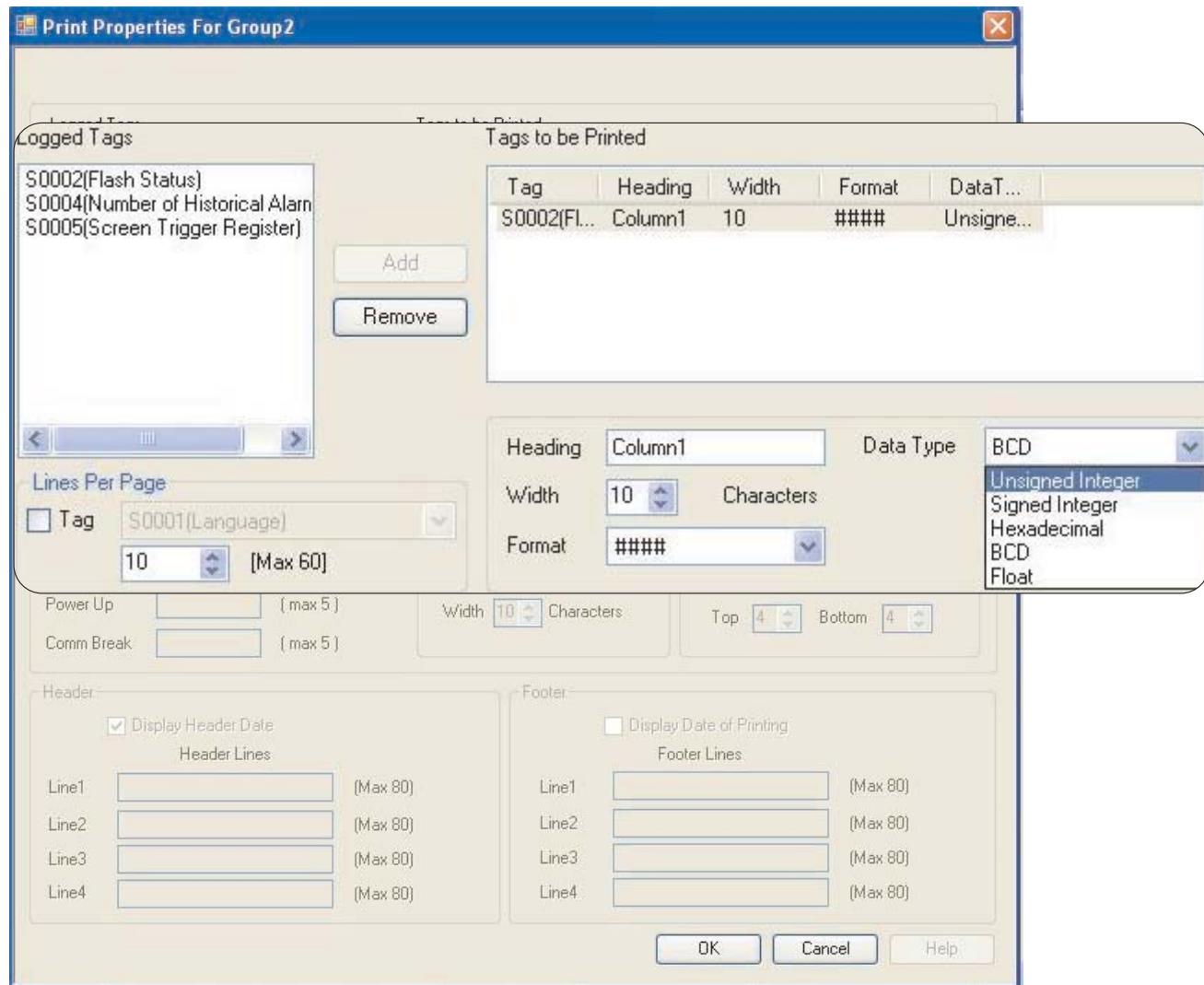
**Step 2: In Group Information**

For other three groups:

Select group. Select Logging mode. Add defined tags to be logged and go to print properties.

Select logged tags to be printed. Select Data type.

Note: For 2 byte integer & 4 byte integer, user can select any type of data except "Float".  
For "Float" type integer, user can select only "Float" type data.

**Step 3: In "Start / End Time Tags for Printing" tag**

Select Printing duration.

If user selects "Single day" option, then user can take printout for selected day only.

User can enter date (DD), month(MM) and year(YY) in selected tags at run time. Here default time is from 00:00:00 to 23:59:59.

Group Information Start / End Time Tags for Printing General Information

**Printing Duration**

Single Day     More Than 1 Day

**Start**

DD	S0001(Language)	MM	S0001(Language)	YY	S0001(Language)
hh	S0001(Language)	mm	S0001(Language)	ss	S0001(Language)

**End**

DD	S0001(Language)	MM	S0001(Language)	YY	S0001(Language)
hh	S0001(Language)	mm	S0001(Language)	ss	S0001(Language)

If user selects “ More than 1 day “ option, then user has to enter start date / time and End date / time in appropriate tags as given below.

Group Information Start / End Time Tags for Printing General Information

**Printing Duration**

Single Day     More Than 1 Day

**Start**

DD	S0001(Language)	MM	S0001(Language)	YY	S0001(Language)
hh	S0001(Language)	mm	S0001(Language)	ss	S0001(Language)

**End**

DD	S0001(Language)	MM	S0001(Language)	YY	S0001(Language)
hh	S0001(Language)	mm	S0001(Language)	ss	S0001(Language)

To print Log data user has to add button task as shown below:



User can take group wise printing by giving the group number and the print port . But while processing this, please ensure that selected port should be defined as a serial printing port.

User can stop printing at any instance of printing by giving stop printing of group task to button.

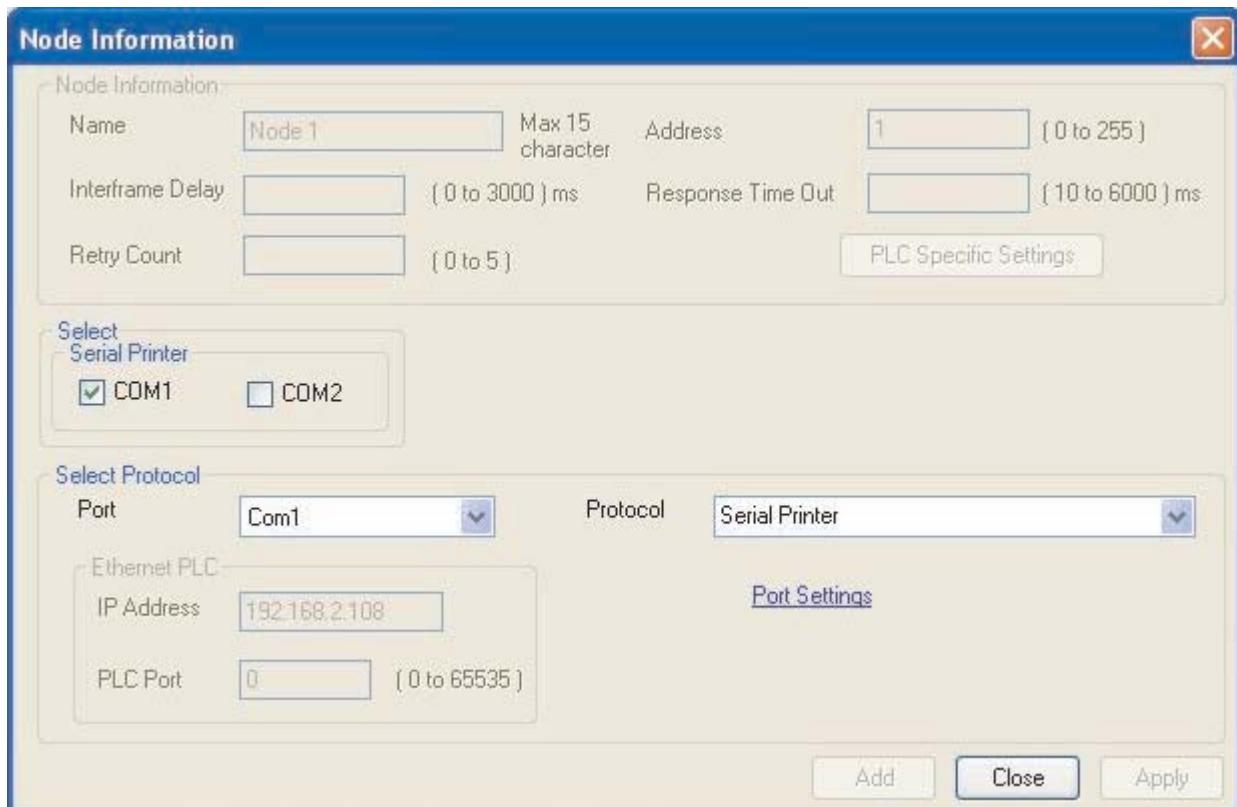
## **PRINTING**

In this chapter. . . .

- \* Printing from ARGOS FP unit
- \* Printing Port Setup
- \* Printing from FlexiSoft Configuration software

### 13.1 Printing from ARGOS FP unit

Configure printing port by selecting Baud rate, Parity and Number of Bits from Node Information window.



1. Presentation of screen on printer page decided by No of Columns, Terminating Char and Max chars per screen.
2. Number Of Columns: By default this field is set to 80. But user can set any value upto column width of printer. Maximum limit is 255.
3. Terminating Char: By default this char is NONE, Options are given below –  
 NONE : No char.  
 CR : Carriage returns.  
 LF : Line Feed.  
 CR + LF: Carriage return + Line Feed

ARGOS FP unit will send selected terminating character after completion of number of characters decided in No of column field.

4. Max Chars per screen: By default this field shows, max 5x7 font chars present in one screen. User can select how many characters he want to print from screen. Please note that user cant select starting location for printing, it is always considered as a top left of the screen.

Examples:

Considering Printer column width is 80.

1. **No Of Columns - 80**  
**Terminating Char - NONE**  
**Result** - After printing 80 chars, carriage of printer comes to next New line automatically.
2. **No Of Columns - 50**  
**Terminating Char - NONE**  
**Result** - As there is no terminating char , printer will print continuous 80 char from screen and then carriage of printer comes to next new line automatically.
3. **No Of Columns - 50**  
**Terminating Char - CR**  
**Result** - After printing 50 chars carriage will return to starting location of same line.

**4. No Of Columns - 50**

**Terminating Char - LF**

**Result** - After printing 50 chars, printer will insert 1 blank line of column width. And from same location next 50 chars will print.

**5. No Of Columns - 50**

**Terminating Char – CR + LF**

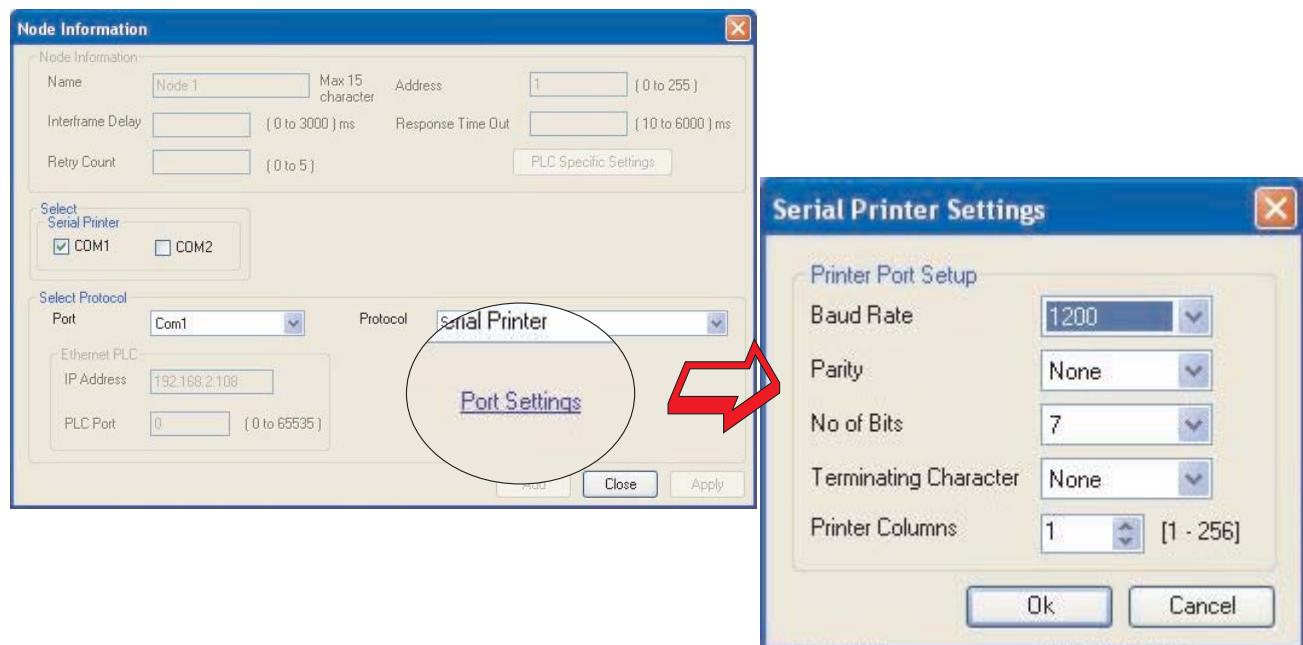
**Result** - After printing 50 chars , printer will insert 1 blank line of column width and carriage will return to home position.

**Note:** Printer can print 5x7 font in same proportion. But if user select higher font size, then number of spaces will be inserted in two characters as per font size.

### 13.2 Printer Port Setup

A printer port can be set through Node Information.

Select Serial Printer in the Node Information and when you click on Comm Settings, following window appears.

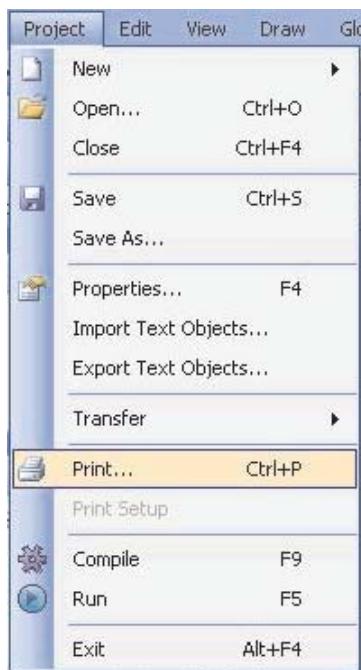


The parameters for setting up the printer are:

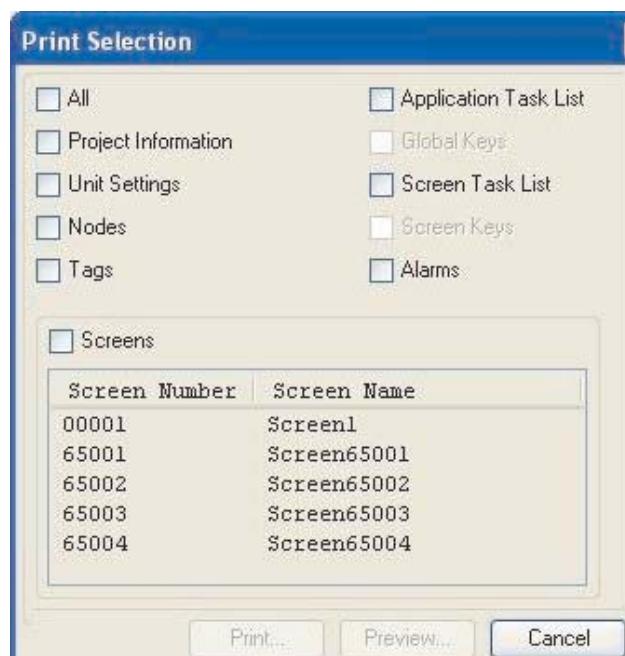
1. **Baud Rate:** Supported Baud Rates are 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K & 187.5K.
2. **Parity:** Parity can be None, Even or Odd.
3. **Number of bits:** Number of bits can be 7 or 8.
4. **Terminating Character:** Terminating character can be None, CR (Carriage Return), LF (Line Feed) or CR+LF.
5. **Printer columns:** Number of columns can be minimum 1 to maximum 255.

### 13.3 Printing from FlexiSoft configuration software

Select the **Project | Print** menu option to print the FP application.



Select the items that user wants to print.



Screen Number	Screen Name
00001	Screen1
65001	Screen65001
65002	Screen65002
65003	Screen65003
65004	Screen65004

Print...

Preview...

Cancel

## **USB HOST FUNCTIONALITY**

In this chapter. . . .

- \*      USB Host Functionality
- \*      Downloading from USB Stick to ARGOS FP unit
- \*      Uploading to USB Stick

## 14.1 USB Host Functionality

The USB host port can be used to perform a download or an upload of an application to or from an USB stick.

This enables the user to update the FP Series or download logging data without using Personal computer.

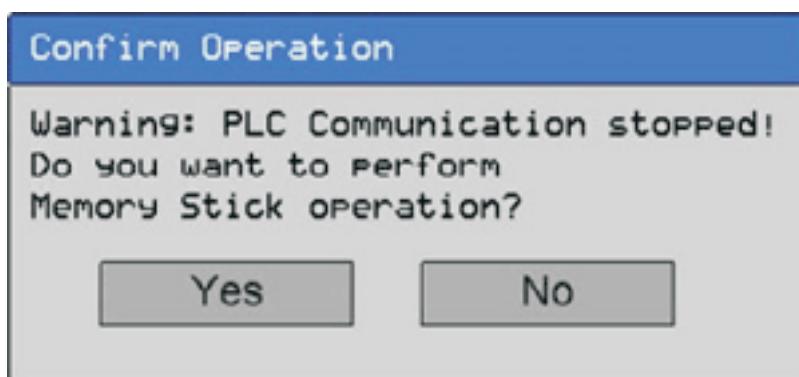
The FP-Series only supports USB sticks that are formatted FAT or FAT32.

**Note**

Make sure to backup all data on the USB stick before connecting it with the ARGOS FP Series.

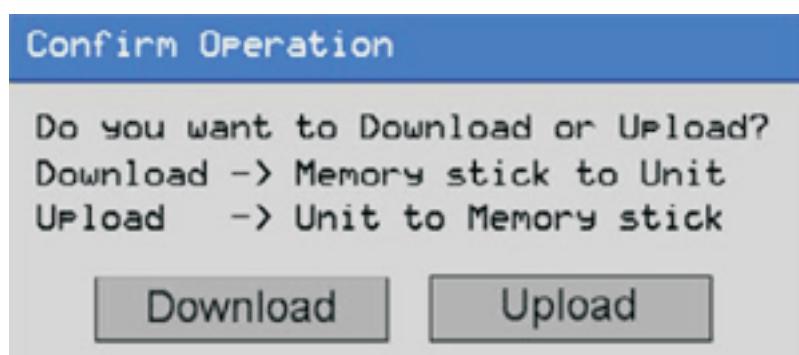
To establish a connection between the USB stick and the FP unit proceed as follows:

- 1) Place the USB stick in the USB host port.
- 2) An **empty** FP unit (no application or no firmware) will automatically start the USB Host function when the FP unit detects an USB stick.
- 3) When running an application setting system bit s037 to 1 will start USB host function provided the USB stick is connected.
- 4) Click YES to continue.



Please wait..  
Enumerating Memory Stick

- 5) Click Download or Upload



## 14.2 Downloading from USB stick to ARGOS FP Unit

In order to download an application from the USB stick to the ARGOS FP HMI, the following files must be present in the project folder: e.g. for the product FP4035TE:

Folder name: "FP4035TE"

Application file name : "FP4035TE\_APP.PZM",

Firmware file name : "FP4035TE\_FW.ABS",

Font file name : "FONT\_File.BIN",

Ladder file name : "FP4035TE\_LD.BIN"

This folder and contents can be found in the saved project location on your Personal Computer.  
The following data can be downloaded to the unit.

Application

Firmware

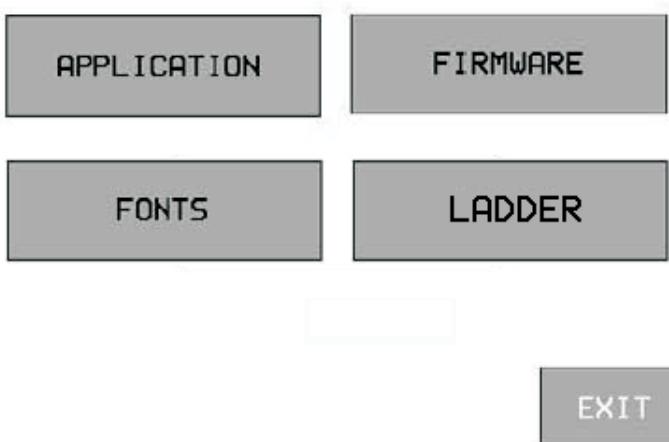
Fonts

Ladder

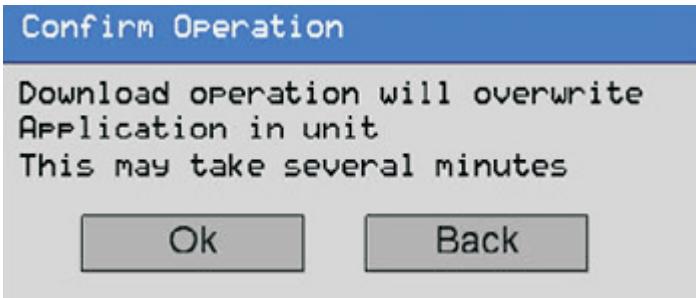
1) Connect the USB stick to the unit.

2) Click **Download**.

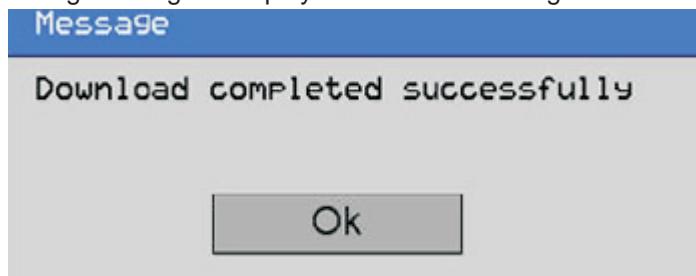
### Download Options



3) Click APPLICATION to erase the old application and download the new application from the USB stick to the unit.



4) The following message is displayed after downloading:



Click **OK** to finish. Now you can repeat step 3 and 4 for firmware and fonts.

Note:-

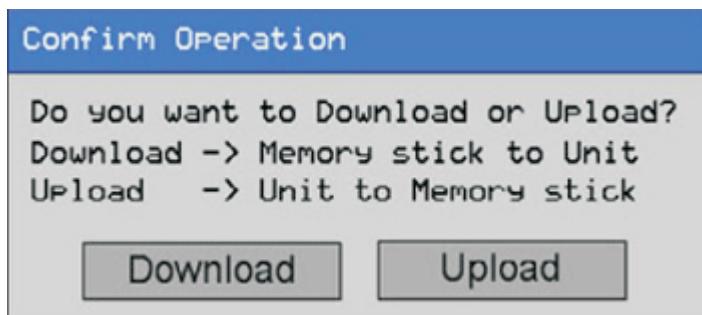
1) This Download operation can be performed only when proper respective products folder is available in USB Stick

### 14.3 Uploading from ARGOS FP unit to USB stick

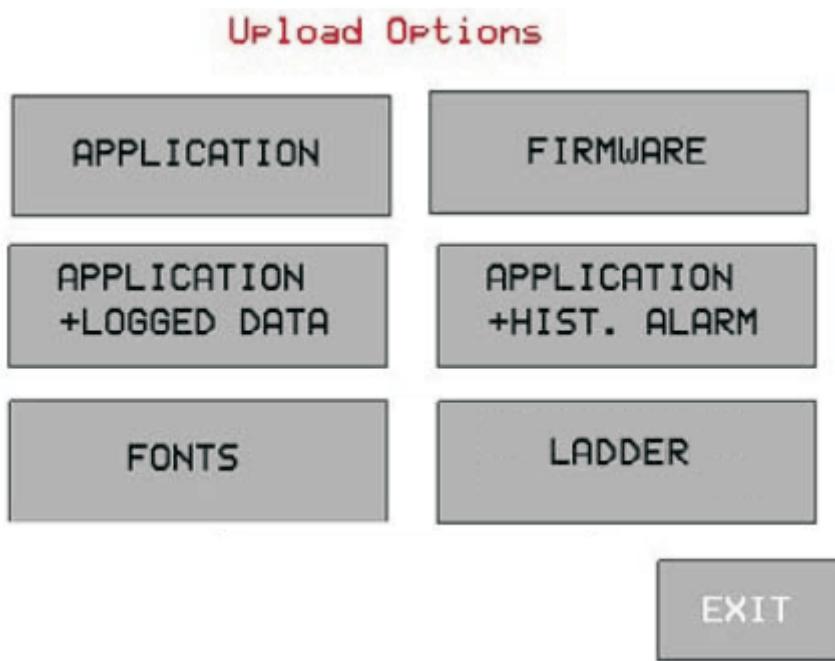
The following data can be uploaded from the ARGOS FP unit to the USB Stick

- Application
- Firmware
- Application + logged data
- Application + Historical alarm data
- Fonts
- Ladder

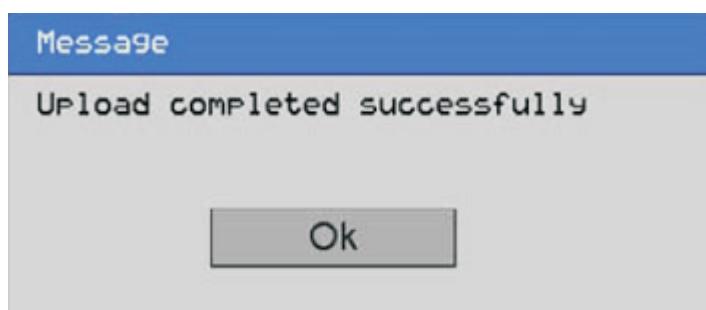
- 1) Connect the USB stick to the FP.
- 2) Click **Upload**



- 3) Click **APPLICATION** to upload the new application from the FP unit to the USB stick



- 4) The following message is displayed after uploading



Click **OK** to finish. Repeat step 3 and 4 if you need to upload any of the other options also need to be uploaded to the USB stick.

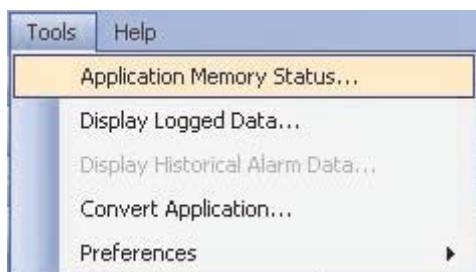
## **MISCELLANEOUS**

In this chapter. . . .

- \* Application Memory Status
- \* RTC
- \* Templates
- \* USB Driver Installation
- \* Ethernet FAQ
- \* Visibility Animation
- .. Tricolor backlite Color

## 15.1 Application Memory Status

User can see the memory status of his application from Memory Configuration Wizard. It gives information about the available memory of the application, the used memory in the application and the free memory in terms of Bytes, KB and percentage.



Memory Configuration Wizard can be opened from **Tools | Application Memory Status...** menu.  
After Selecting "Application Memory Status..." following window will be displayed:

**Memory Status**

Over all Memory Details				Logger Memory Details		Ladder Memory Details			
Memory	Bytes	KB	Percentage	Memory Allocated :		Memory	KB	Steps	Percentage
Available	8126464	7936	100	256	KB	Available	96	16384	100
Used	303575	296.46	3.73			Used	0.02	4	0.02
Free	7822889	7639.54	96.26			Free	95.97	16380	99.97

Application Details		
Definition Type	Total	Bytes
Nodes	1	1616
Screens	5	35126
Keys	0	0
Alarms	0	0
Power on Tasks	1	6
Global Tasks	0	0
Data Logger	1	165
Blocks to be Read	0	0
Tag Names	63	882
Historical Alarm Memory	1	65536
Other Bytes	-	265780

\* Please save project to get current memory status

The above window displays the information about overall Flash memory, Logger memory details and application details.

**Over all Memory Details:** Shows total available memory, used memory and free memory in Bytes, MB and in percentage.

**Logger Memory Details:** Shows total logger memory allocated by designer for Data Logging.

**Application Details:** Shows details about the overall application. The detail information of Application with Definition Type(of objects/Tasks), Total number of (Objects/Tasks) and Bytes (memory information utilised by object/Task). The detail information displayed are as follows:

- a) Nodes:- Displays information of total number of nodes configured in "Nodes" section , with its memory information in Bytes. Operator Panel FP is also one node.
- b) Screens:- Total number of Screens defined in application project, with its memory information in Bytes. Popup Keypad are also included this.

- c) Keys:- Total number of Global Keys used to execute some task, with its memory information in Bytes. Two Simultaneous Keys used is also considered as single key.
- d) Alarms:- Total number of alarms defined in Alarm Section of application project, with its memory information in Bytes.
- e) Poweron Task:- Total number of Tasks assigned in Poweron Task Section in particular application project, with its memory information in Bytes.
- f) Global Tasks:- Total number of Tasks assigned in Global Task Section in particular application project, with its memory information in Bytes.
- g) Data Logger:- Information of memory in bytes used for selection of information used in Data Logger Section.
- h) Blocks to be Read:- Total number of blocks used in application, with its memory information in Bytes
- i) Tag Names:- Memory information in Bytes required for name of the tags assigned in Tag Data base.
- j) Historical Alalrm Memory:- Maximum memory in bytes allocated for historical alarm.
- k) Other Bytes:- Information of memory in application other than above features.

## 15.2 Real Time Clock (RTC)

The entire ARGOS series has built in Real Time Clock (RTC). This clock has battery backup.

In the absence of power, the battery will retain the clock settings.

The time and date information is available through Default System Tags defined in Tag Database.

Tag No	Tag Name	Port	Tag Address	Byte(s)	Node Name	Tag Type
32	Unit default gateway hi word	-	MW0038	2	Operator Panel	Default Tag
33	Carry bit	-	S00000	bit	Operator Panel	Default Tag
34	Invalid RTC date entry	-	S00019	bit	Operator Panel	Default Tag
35	COM1: failed node reconnect control	-	S00021	bit	Operator Panel	Default Tag
36	COM2: failed node reconnect control	-	S00022	bit	Operator Panel	Default Tag
37	COM3: failed node reconnect control	-	S00023	bit	Operator Panel	Default Tag
38	Ladder instruction error status	-	S00034	bit	Operator Panel	Default Tag
39	COM 3 status	-	SW0003_13	2	Operator Panel	Default Tag
40	COM 1 status	-	SW0003_14	bit	Operator Panel	Default Tag
41	COM 2 status	-	SW0003_15	bit	Operator Panel	Default Tag
42	RTC day of month	-	SW0010	2	Operator Panel	Default Tag
43	RTC month	-	SW0011	2	Operator Panel	Default Tag
44	RTC year	-	SW0012	2	Operator Panel	Default Tag
45	RTC hour	-	SW0013	2	Operator Panel	Default Tag
46	RTC min	-	SW0014	2	Operator Panel	Default Tag
47	RTC sec	-	SW0015	2	Operator Panel	Default Tag
48	RTC day of week	-	SW0016	2	Operator Panel	Default Tag
49	Scan time register	-	SW0017	2	Operator Panel	Default Tag
50	COM1: failed node reconnect time (sec)	-	SW0018	2	Operator Panel	Default Tag

The tags assigned for RTC are as follows:

Sr. No.	Bytes	Tag Name	Permission
1.	2	RTC-Date	Read Only
2.	2	RTC-Month	Read Only
3.	2	RTC-Year	Read Only
4.	2	RTC-Hour	Read Only
5.	2	RTC-Min	Read Only
6.	2	RTC-Sec	Read Only
7.	2	RTC-Day of Week	Read Only

An application can make use of these Default System Tags for displaying and for decision making.

These default system registers are Read only (as shown in table), so you can not write anything to these registers.

RTC Task present in Tasklist

**Set RTC :-** User can edit RTC (Real Time Clock) registers of the FP unit. This task increments selected RTC register at a time for one instance. User can edit Year / Month / Date / Hour / Minutes / Seconds / Day of the week. User must place a Time / Date object on the screen for editing the RTC. This task is supported in key tasks only. This task is available in Task lists with Key Task (either Function Key or Global Key) only. These tasks either can be assigned to Hardware key or Bit Button key. RTC counts all parameters with leap year compensation so no miss of any Date / time with change in leap Year.

**Copy RTC to PLC:-** This task is supported only in Global task-list. This task copies sequentially 7 RTC parameters from selected tag after every specified RTC Download Time. If this time is specified as 0 seconds then it means this task will be executed as per Global task-list execution time. Click 'OK' to add task in task list.



7 RTC parameters are copied in the PLC Tags starting from the First PLC Tag (IR00000 as shown above) following sequence:

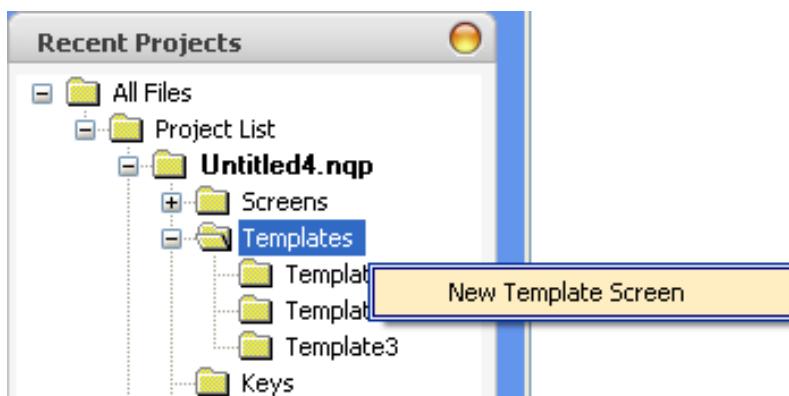
- 1st Tag - Hours
- 2nd Tag - Minutes
- 3rd Tag - Seconds
- 4th Tag - Date
- 5th Tag - Month
- 6th Tag - Year
- 7th Tag - Day of week

### 15.3 Templates

Template screen is the screen which has to be associated to base screen to share the information on it with one/various base screens. Any screen can be associated with another screen. This association of the objects of one screen to one/multiple base screens can be done with “Template” Screen.

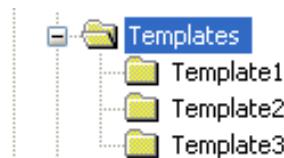
To make use of these Template screen, Open project, go to Project information window and follow the following steps:

Step 1:- Select the Template folder, Right Click on this Templates Folder and click to create new Teplate Screen.



Designer can create maximum upto 10 Template Screens.

Opening this Template folder will show the list of Template screens being defined . These template Screens can also be Renamed with Desired Alphanumeric characters by Designer.



Selecting respective Screen will display the screen with information / Objects that are/or can be embedded on particular screen.

Step 2:- After defining the desired template screens, switch to the base screen to which these template screens are to be associated.

Step 3:- Open the Base screen and observe the last section of templates in Property grid Window

Screen Properties	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
<b>Appearance</b>	
Background Color <input type="color"/> 26	
<b>Design</b>	
Name	<b>Screen1</b>
Number	<b>1</b>
<b>Screen Properties</b>	
Bookmark	<b>No</b>
Description	
No. Of Characters	<b>1590</b>
Password	<b>0</b>
Screen Columns	<b>53</b>
Screen Memory St	No.of Bytes - 68
Screen Print Prop	<b>Display Screen</b>
Screen Type	Base
Wait for PLC Data	<b>Yes</b>
<b>Tasks</b>	
Tasks List	<b>0 Tasks</b>
<b>Templates</b>	
Use Template	<b>No</b>

Step 4:-This templates section has one cell of Use template:

**Use template:-**This cell is to define whether the selected base screen is to be associated with the content of Template screen. By default it is “No”. Selecting “Yes” from Flyout will display more information to be defined for Template screen

Templates	
Use Template	Yes
No Of Templates	2

Step 5:- Selecting “Use Template” screen as “Yes”, “Noof Templates” Cell is enabled. In this cell designer can define about the number of template screens to be associated to the particular selected Base screen. User can enter only the number up to the total number of defined template screen or 10. Maximum 10 template screens can be defined and hence can be associated through this “No of Templates”.

Templates	
Use Template	Yes
No Of Templates	2
Template1	None
Template2	None

Step 6:- Selecting the number of template screens to be associated to particular base screen , will enable the cells for individual Template. Where user will have to select the Template screen from flyout of respective template cell.

Template1	None
Template2	None
<input type="button" value="None"/> <input type="button" value="Template1"/> <input type="button" value="Template2"/> <input type="button" value="Template3"/>	

So when any of the template screen is being assigned to particular base screen, then at the display of this particular base screen on unit, content/information embedded on template screen will be displayed on base screen with same position as on that of template Screen.

So with the use of template screen, any recurring information to be shared on each base screen can be displayed with help of template screen.

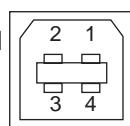
## 15.4 USB Driver Installation Guide

Please follow the steps to install the USB driver for ARGOS FP Series HMI.

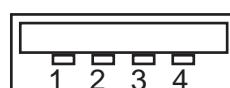
1. Power on the HMI without connecting USB cable to it.

2. Use USB A to B cable to connect HMI to PC.

3. Connect B type end of cable to HMI



4. Connect A type end of cable to PC



5. After connecting cable, PC will detect the HMI and will show pop up message on system tray.



6. Windows will automatically open a Found New Hardware Wizard



7. (To avoid search for windows updater to search for this driver on Web)  
Select  No, not this time

8. Click **Next >** to continue.

9. Following window will appear:



10. Select  Install from a list or specific location (Advanced)

11. Click **Next >** to continue.

12. Following window will appear:



13. Select the  Don't search. I will choose the driver to install. option and click **Next >** to continue.

14. Following screen will appear:



15. Select "Show All Devices" and click **Next >**.

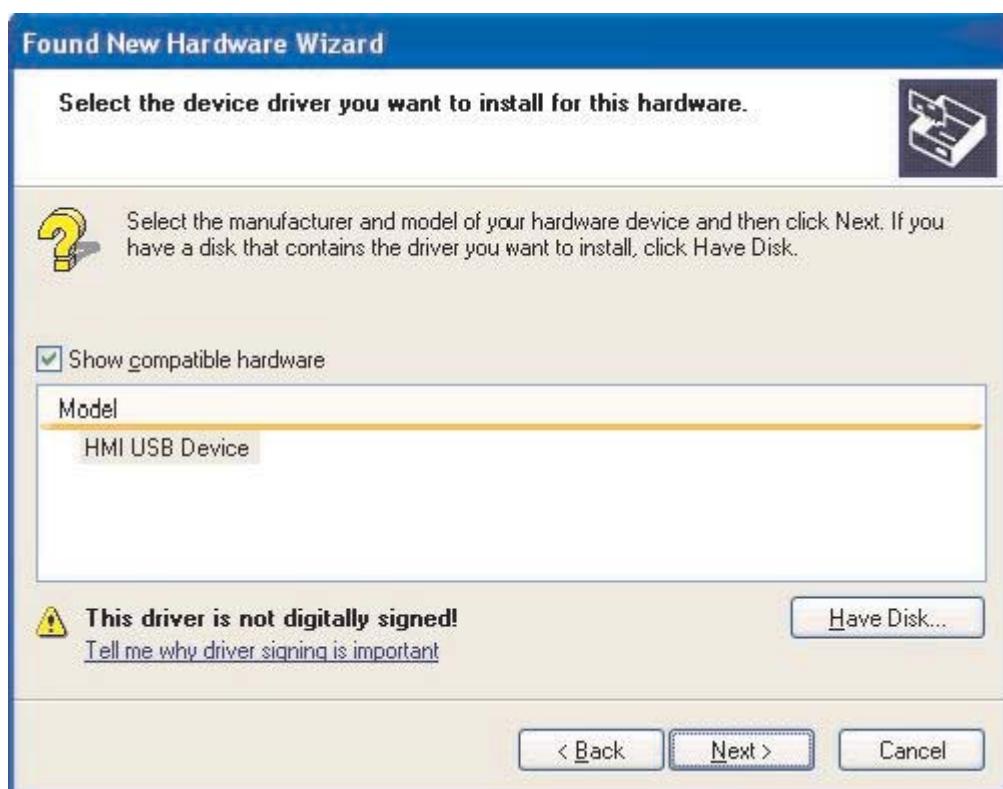
16. Following screen will appear:



17. Select [Have Disk...](#) button, which will open a dialogue box as shown below:



18. The USB drivers are provided in the FlexiSoft software. Click on [Browse...](#) and select the path ...\\Installed Directory\\USBDrivers
19. Click [OK](#)
20. Following window will appear:



21. Select **HMI USB Device** from Model and Click **Next >** to continue.

22. The driver installation will start with following warning:



23. Click on **Continue Anyway** to continue installation.

24. Windows will automatically creat a system restore point and will install the driver.

25. After complete installation following window will appear:



26. Click on **Finish** to end installation.

27. Following popup window will appear on system tray to indicate successful installation.



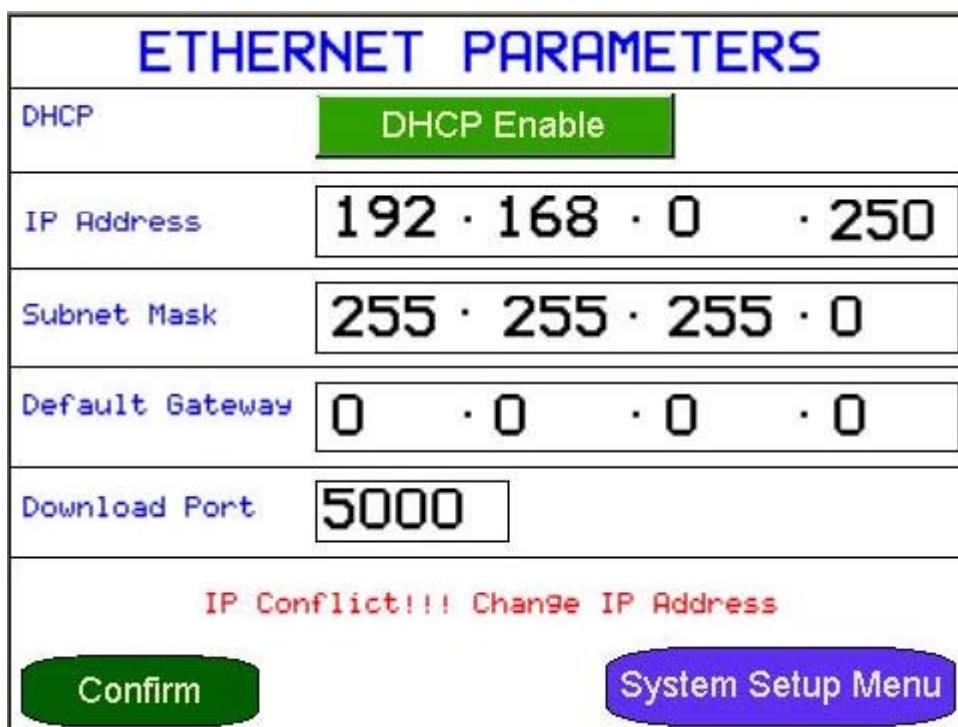
Note: Windows might skip some of the windows, while installing the driver on USB ports.

## 15.5 Ethernet FAQ

Default Ethernet Settings:

**Point-1: IP Conflict Error condition: When firmware is present in the unit.**

If the unit is get connected to the network, the IP address of the unit is found same with some another device (Other than FP) or PC, then FP will close all Ethernet connections and will jump to the “Ethernet Settings” screen in “System Mode” directly as shown below:



Here, in this window, error message: “IP Conflict!!! Change IP Address” will seen flashing. User need to change the IP Address of the unit, click on “Confirm” button and then exit from the system setup menu. Now at power-on, no conflict is found, then it will go to application screen

**Point-2: IP Conflict Error condition: When firmware is not present in the unit.**

If the unit is get connected to the network, the IP address of the unit is found same with some another device (Other than FP) or PC, then FP will close all network connections and display the conflict message as:

“IP Conflict!!! Change IP Address”

“Closing Network Connections due to IP conflict”

Here, user need to change the IP address through “Project Configuration” window and need to download Ethernet settings through any one of the ports except Ethernet port.

**Point-3: In RUN Mode**

System Register S0008 is defined as IP Conflict Status Register. If FP is in the RUN mode condition, any device comes in the network with same IP address of the FP, this system register will show value “0”. This will impact on another device and that will face IP-conflict problem.

This may happen that, the FP is now out of the network (i.e. connection cable is unplugged) and after some time, connection cable is plugged again, FP will check for IP conflict and if it finds, it will show S0008 register as “1” and will immediately close all the connections. This process will repeat for three times, once the unit is plugged within network. Conditions for S0008:

When Zero ('0') -> No IP Conflict

When One ('1') -> There is an IP Conflict

## 15.6 Visibility Animation

Visibility animation for data and button object :

User can animate data entry register and data entry coil using this feature in terms of show or hide. Below given example will elaborate the working of this feature in detail.

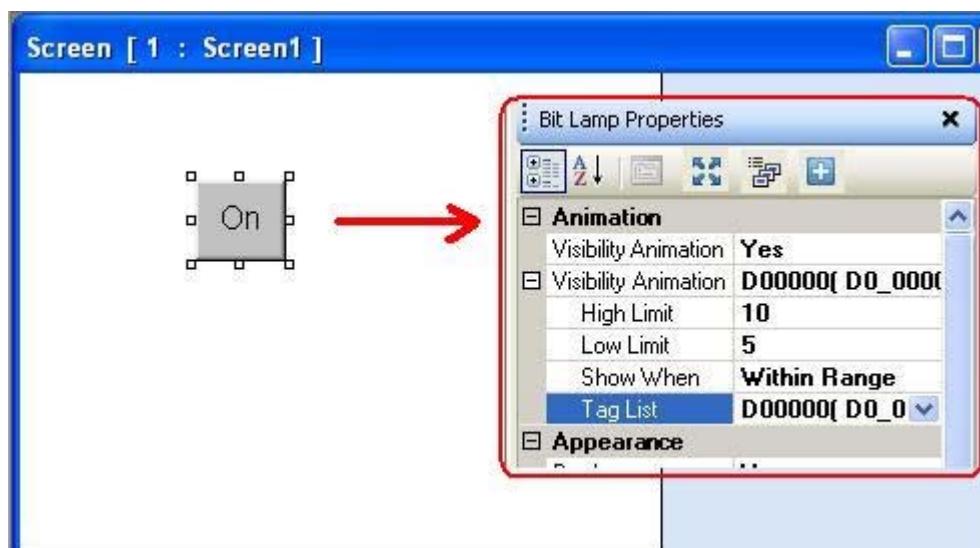
If user select “Visibility Animation” as “Yes”, then below said parameters will display:

Animation	
Visibility Animation	Yes
Visibility Animation	MW0000( PLC mod)
High Limit	65535
Low Limit	0
Show When	Within Range
Tag List	MW0000( PLC mod)

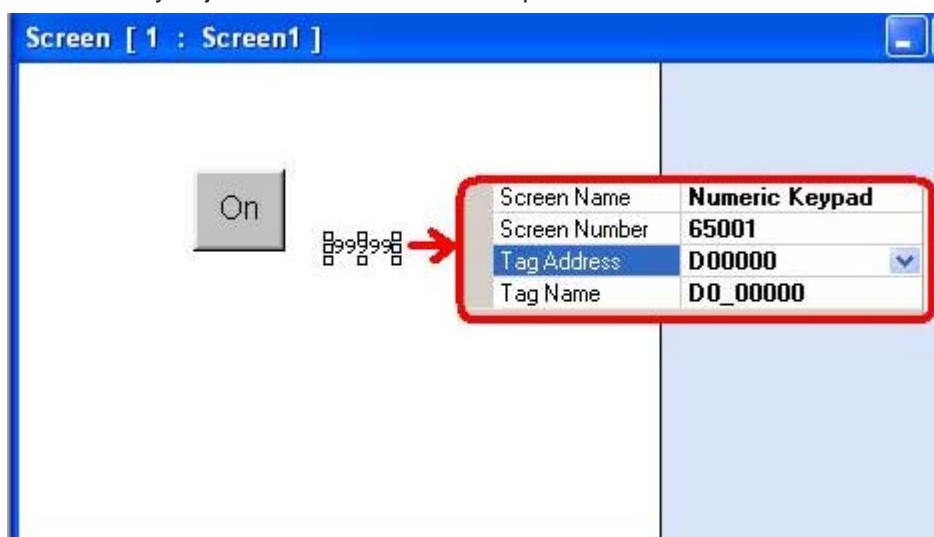
- (i) Select “Yes” if wants to show or hide the data.
- (ii) Define “High Limit” or “Low Limit”.
- (iii) Define “Show When”: Within range or Out of Range.
- (iv) Define tag register.

Example is given below:

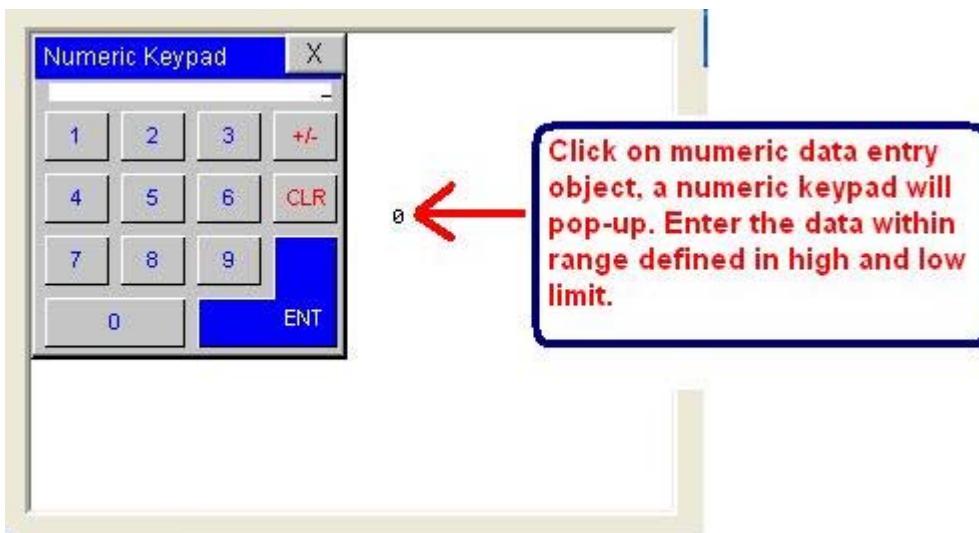
1. A bit lamp object is taken on the screen and select visibility animation as “Yes”. Defined the parameters as shown below:



2. Now taken a numeric data entry object to control the bit lamp object. Defined the tag register for this numeric data entry object same as that of bit lamp as shown below:



3. Compile and run the application. A numeric data entry object will display on the screen. When user will click on this a keypad will pop-up. If the data entered is within range 5 - 10, then a bit lamp object will be seen. (Here for better explanation, offline simulation screens are shown).



4. If user selects "Show When" tab as out of range and the numeric data entered is not within range 5 - 10, the application will show a bit lamp object. If user selects the data within range (i.e. say 6), the application will not show the object.

Thus user can set the limit extremes as 0 to 65535. Beyond this, application will not support. Also please note that, at the values defined as limits, the animation will not seen.

### 15.7 Color combination of tricolor backlite

User can change the backlite color of models FP4020 and FP4030, by setting system registers: S39, S40 and S41.

The color combination is given below:

Sr. No.	RED S39	GREEN S40	BLUE S41	Backlite Color
1	0	0	0	Backlite OFF
2	1	0	0	RED
3	0	1	0	GREEN
4	0	0	1	BLUE
5	1	1	0	YELLOW
6	0	1	1	CYAN
7	1	0	1	MAGENTA
8	1	1	1	WHITE

## **LADDER EDITOR**

In this chapter. . . .

- \* About Ladder
- \* Move, cut, copy, paste & delete an element
- \* Move, cut, copy, paste & delete net
- \* Connecting Ladder Elements & Functions
- \* Inserting command
- \* Deleting Command

## 16.1 About Ladder

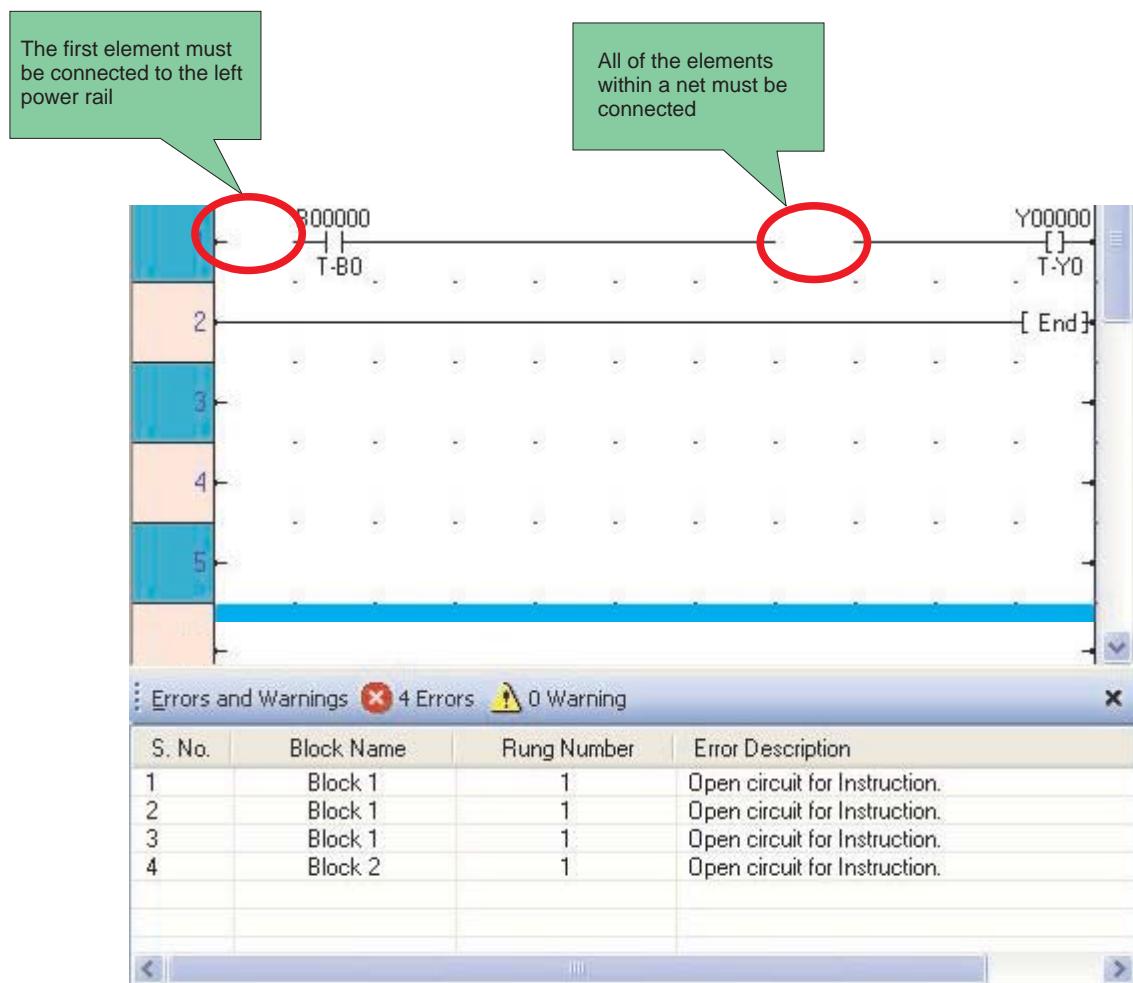
You use Ladder Logic to write your project application. Ladder is based on Boolean principals. Ladder Diagrams are composed of different types of contact, coil and function block elements. These elements are placed in nets. In any Ladder Diagram, the contacts represent input conditions. They lead power from the left rail to the right rail. Coils represent output instructions. In order for output coils to be activated, the logical state of the contacts must allow the power to flow through the net to the coil.

### 16.1.1 Ladder Net

The Ladder diagram contains a left and right rail. Between these rails, the control application is arranged in nets. A net contains a row of Ladder elements that drive a coil. Power flows through the ladder elements in a net from left to right. Each net must contain only one rung.

This is why the first ladder element in the net must touch the left Ladder rail. All of the elements in a net must be connected to allow power flow. You do not need to connect the last element on the right to the right side of the ladder in each net.

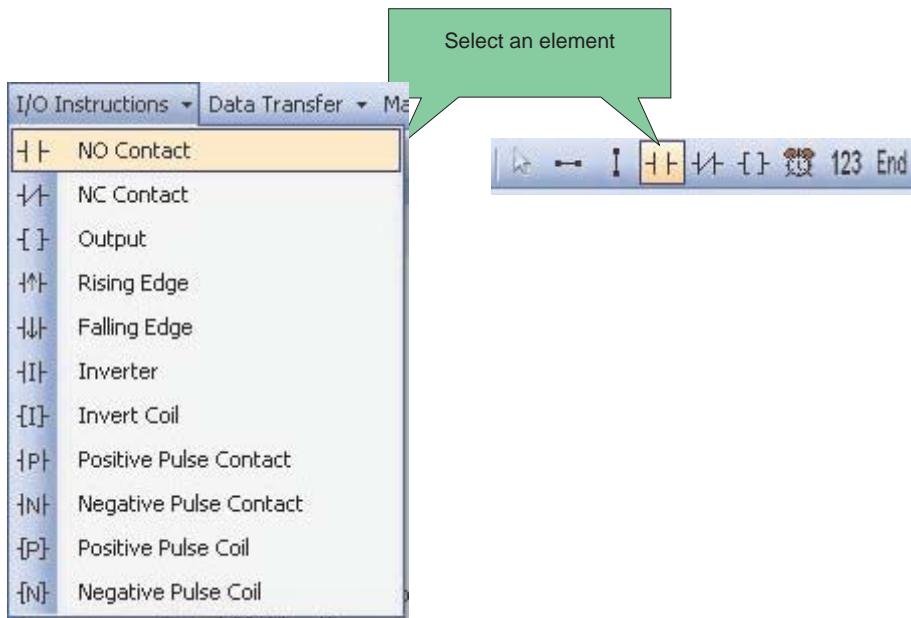
If the elements in a net are not connected, the software will display an error message in the View Window when you compile your project.



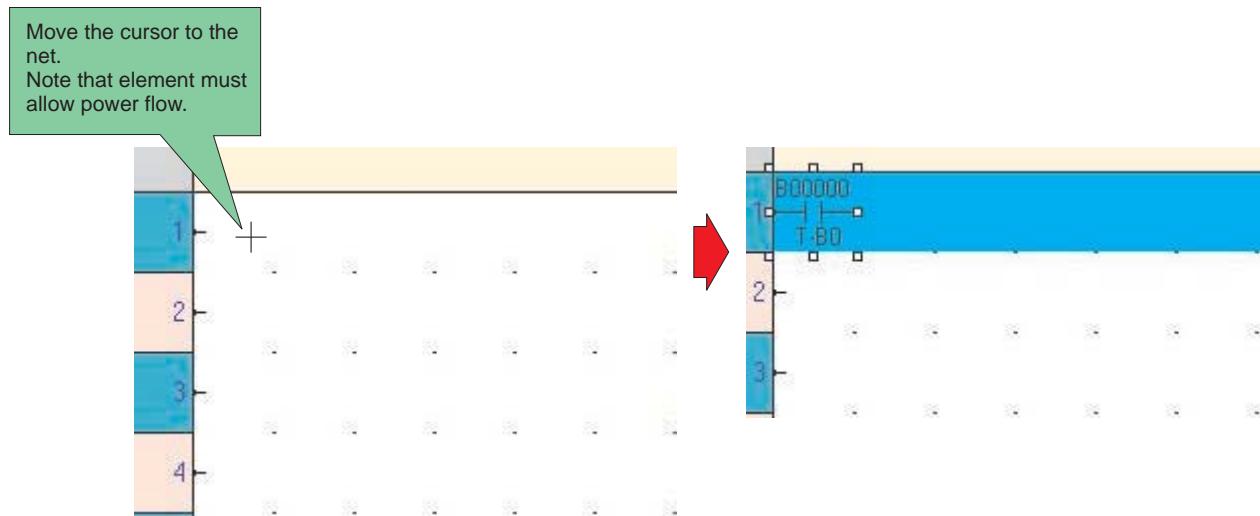
### 16.1.2 Placing a ladder element in a net

Select any type of Ladder element by:

1. Clicking its icon on the Ladder toolbar, or - Selecting it from the Ladder menu.



2. Move the cursor to the desired net location, then click.

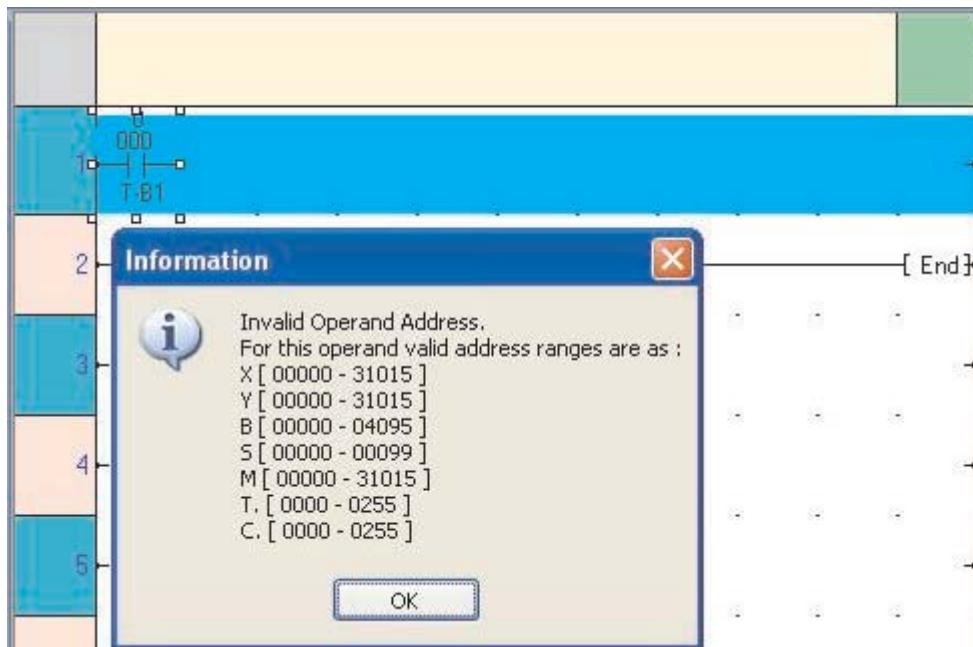


3. The element drops into place and the Select Operand and Address dialog box opens.

4. Link the desired operands.

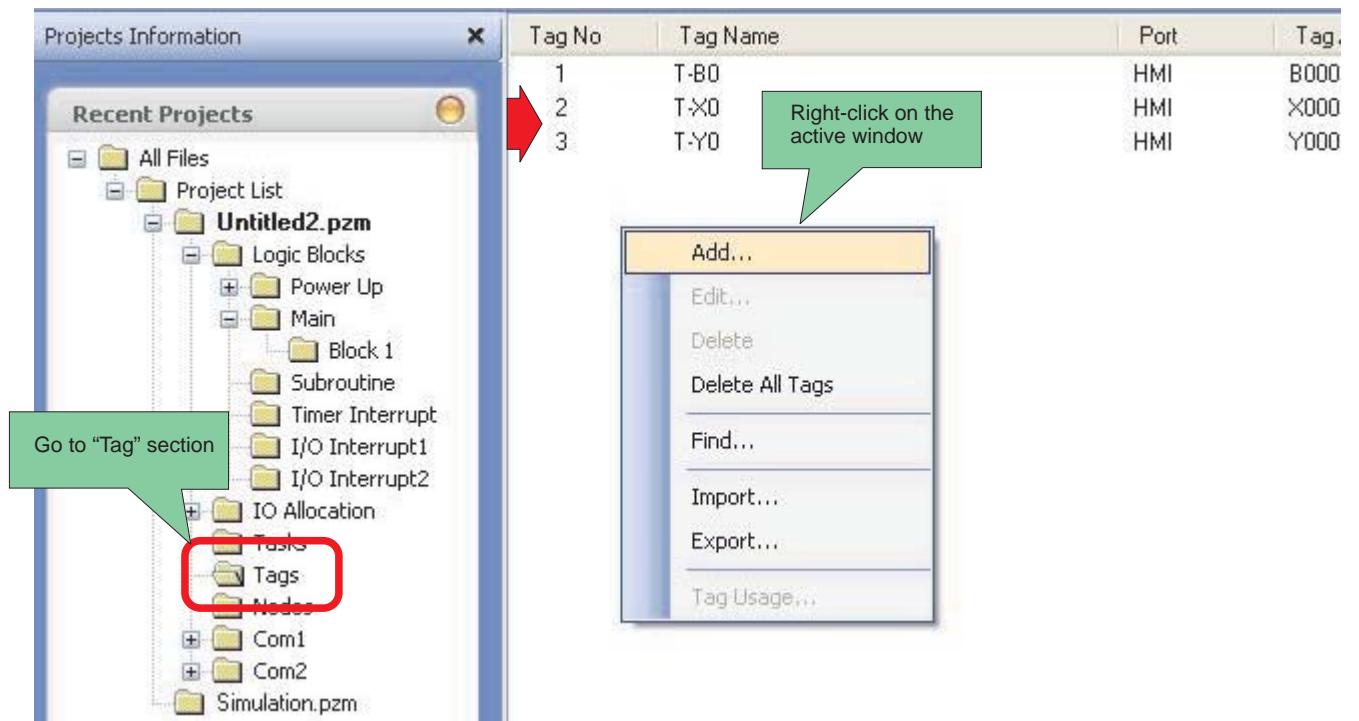
### 16.1.3 Changing an element's or function's operand

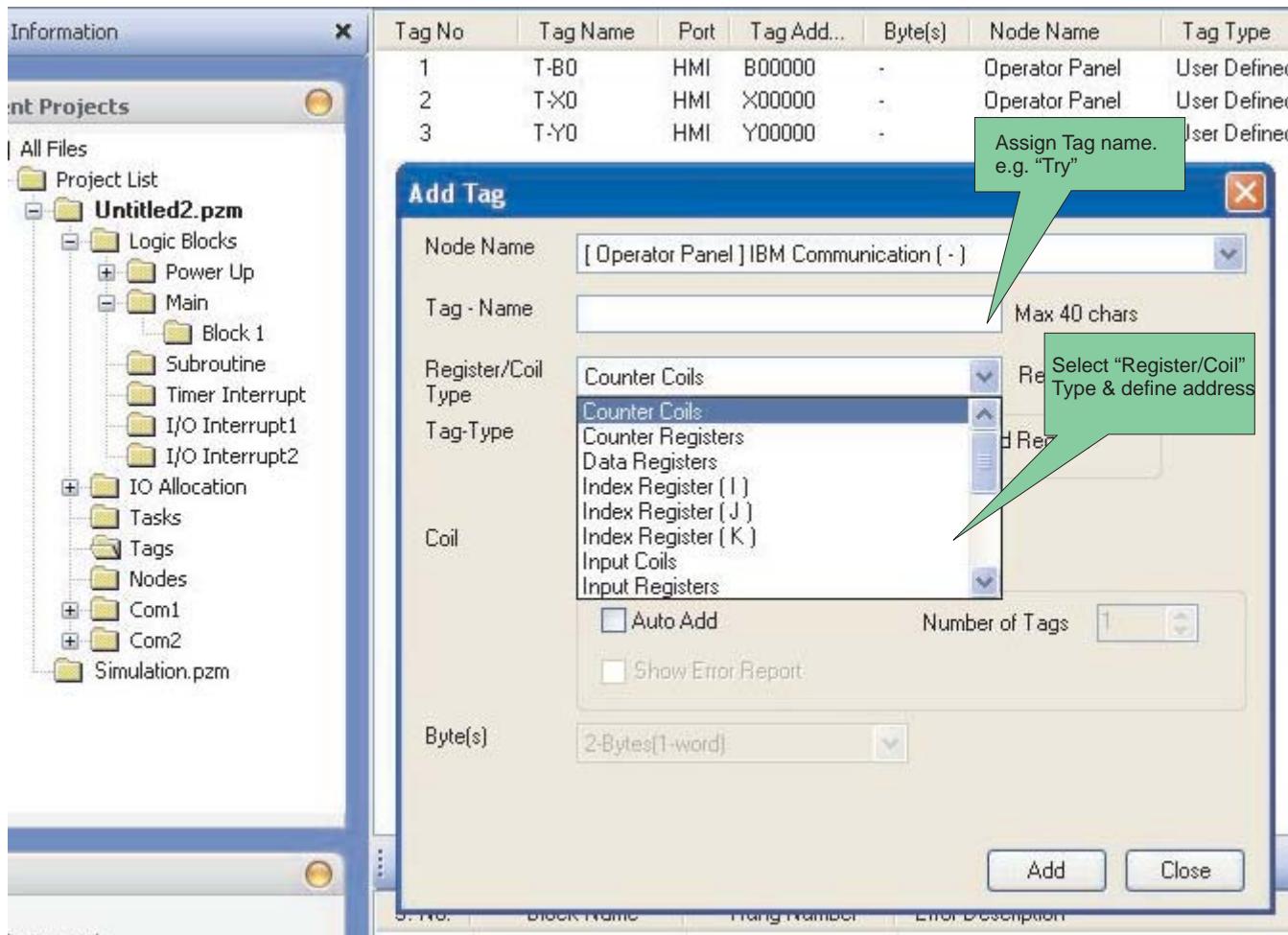
If you enter wrong operand address; then it displays valid addresses range.



To edit an element's operand:

1. Go to "Tag" section from Project Information Explorer section. Here, it displays the list of tags present in the application.
2. To add new tag, right-click on the active window; "Add Tag" docker window will appear:

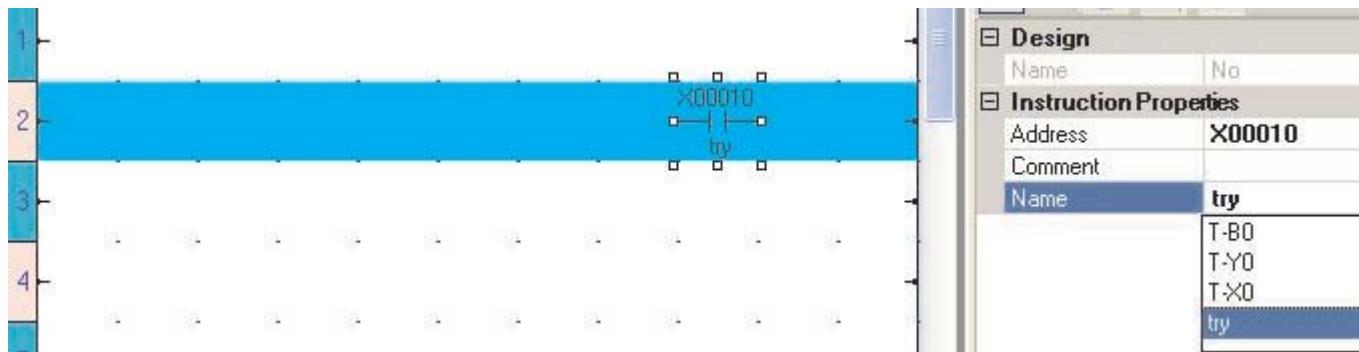




3. This will add new tag in the tag list as shown below:

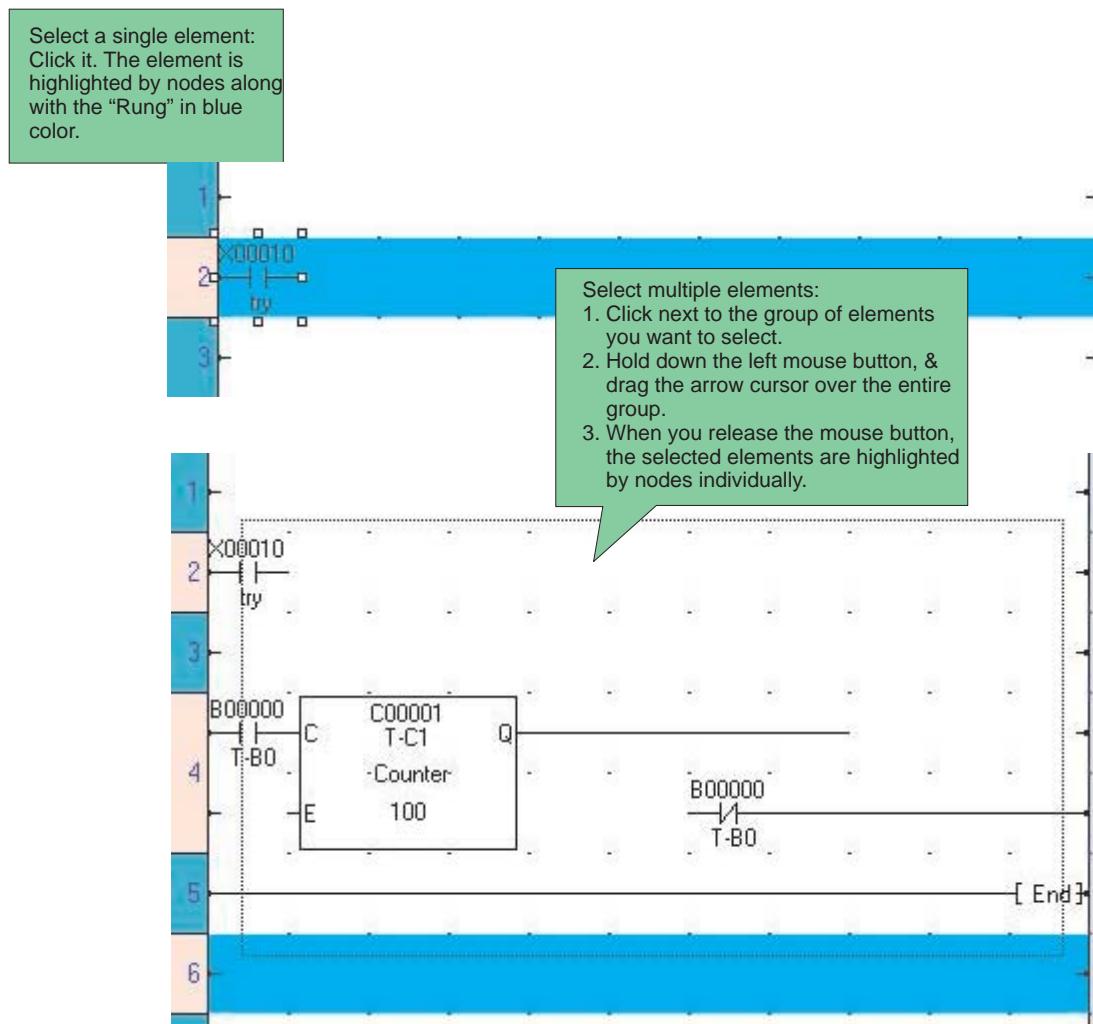
Tag No	Tag Name	Port	Tag Add...	Byte(s)	Node Name	Tag Type
4	try	HMI	X00010	-	Operator Panel	UserDefined
1	T-B0	HMI	B00000	-	Operator Panel	User Defined
2	T-X0	HMI	X00000	-	Operator Panel	User Defined
3	T-Y0	HMI	Y00000	-	Operator Panel	User Defined

4. Then switch to again “Block” section from explorer. When you click on operand address of an element, from the common property window, you can define new operand address to the element as shown:



#### 16.1.4 Move, Cut or Copy & Paste an Element

First make your selection:



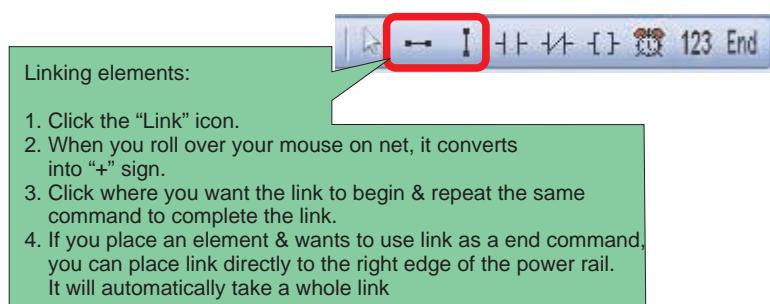
Next, select Cut or Copy and then Paste:

**Deleting Elements:**

To delete selected elements, click the Delete button on the toolbar. You can also right-click a single element, then select Delete from the menu.

**16.1.5 Connecting Ladder Elements and Functions**

Use the Link Elements tool to link two or more elements or functions in a net. All net elements must be connected to allow power to flow through the net. If they are not connected, you will not be able to compile the project.



You can select, Cut or Copy and Paste the links same as "Elements" as described above.

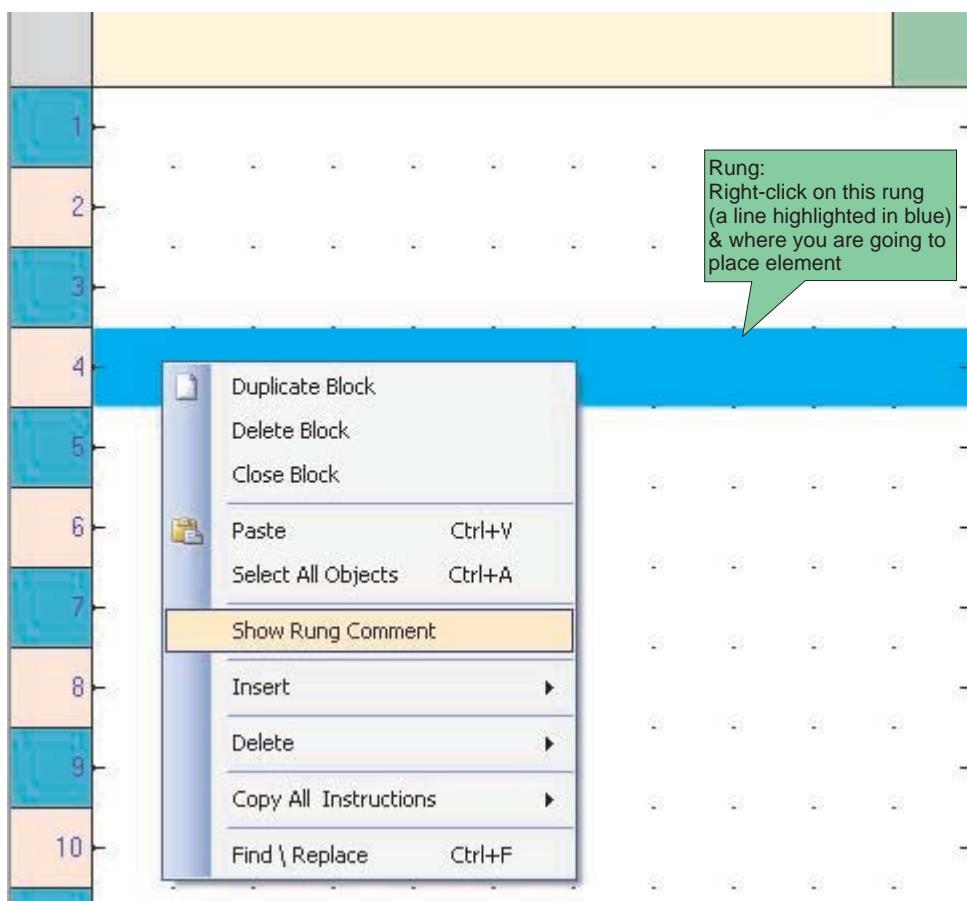
**Deleting Links**

1. Select the desired links.
2. Press the Delete button on your computer keyboard; the link is deleted.

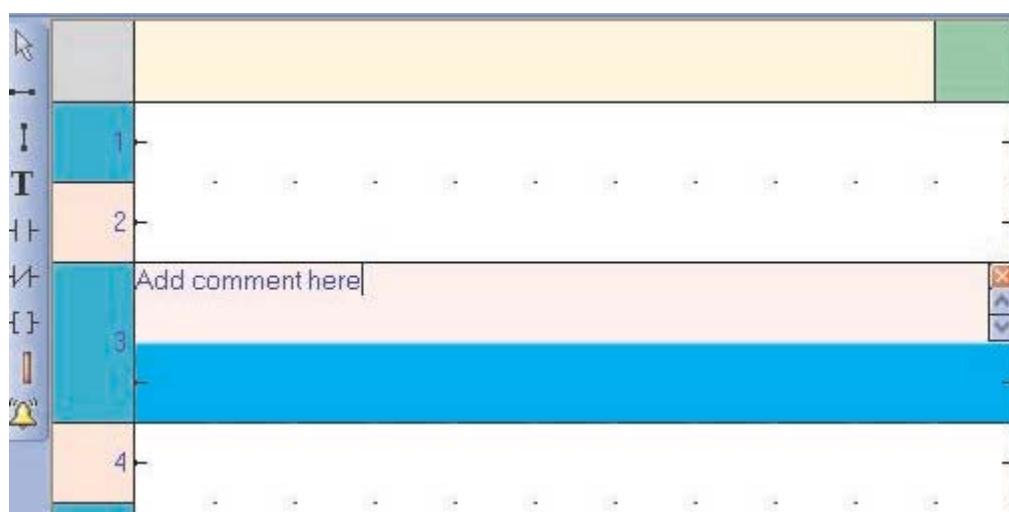
**16.1.6 Rung Comment Tool**

You can insert comments into the Ladder Editor to label different parts of your program. Comments can be written directly into the Ladder, or written in Notepad or Word and pasted into the comments pane. Comments can be downloaded to controller.

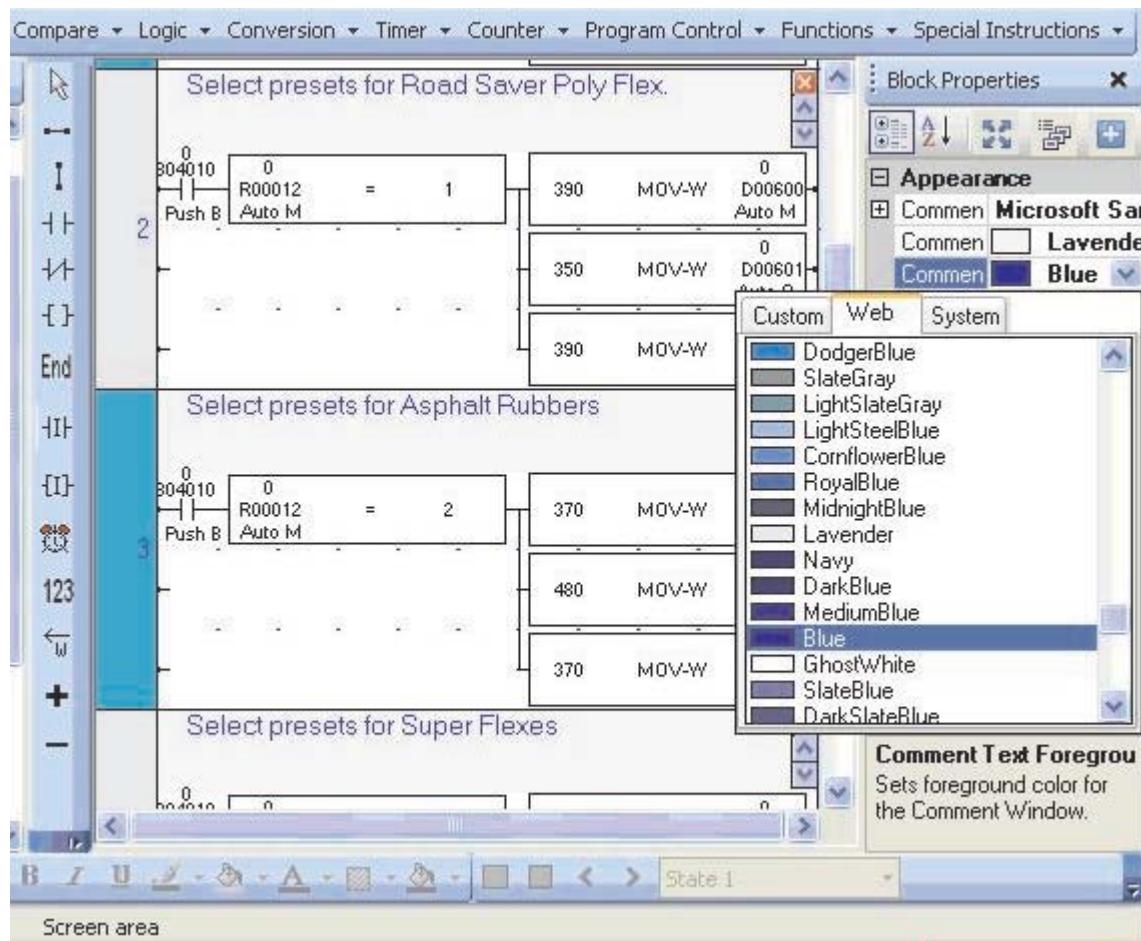
**Inserting a comment**



Right click on the ladder text editor; click on “Show Rung Comment”, this will enable rung comment docker window above the rung on which, user would like to add.



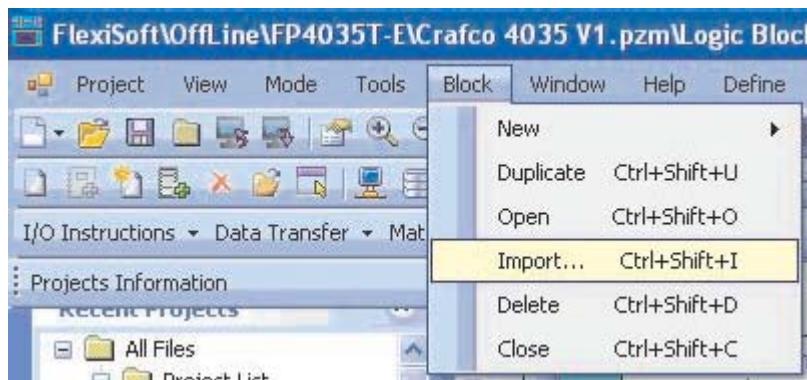
Comment area **text color**, **Back color** and **font** can be set using setting in Block properties. These settings are located in **block properties** window as shown below:



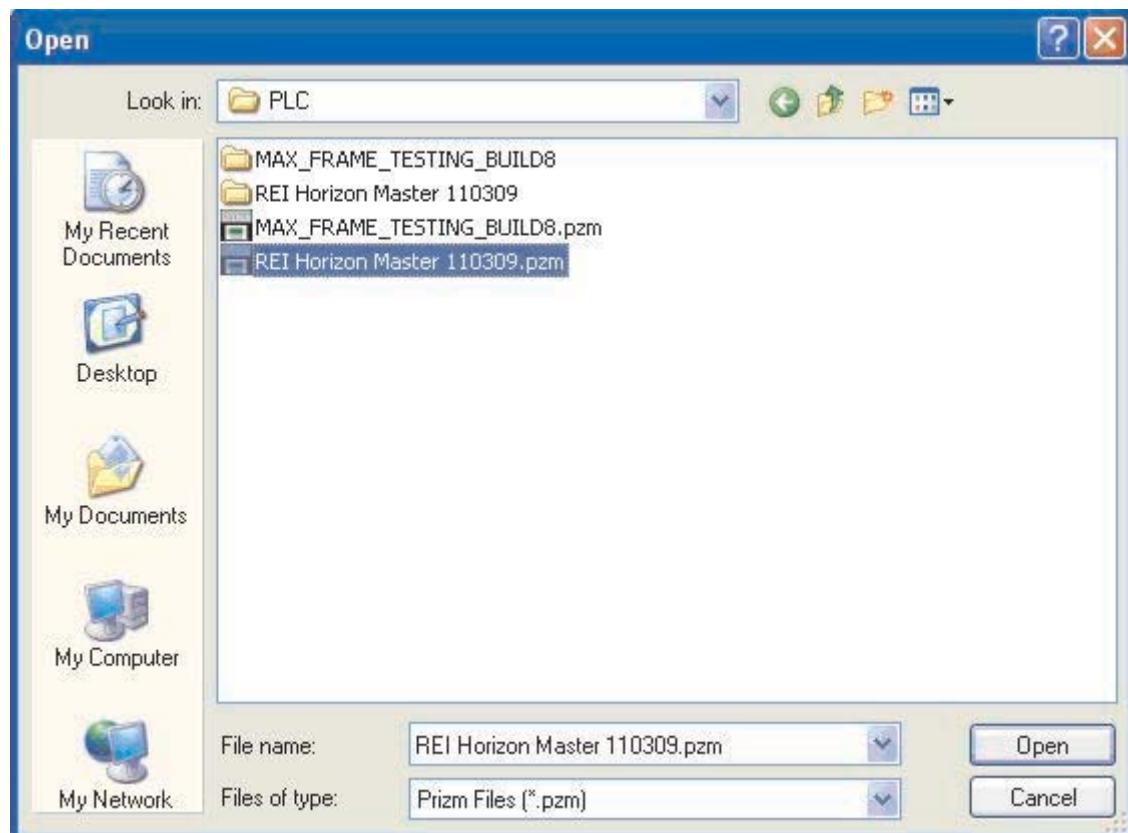
Note these settings are common for all rungs defined within a block.

### 16.1.7 Import Block

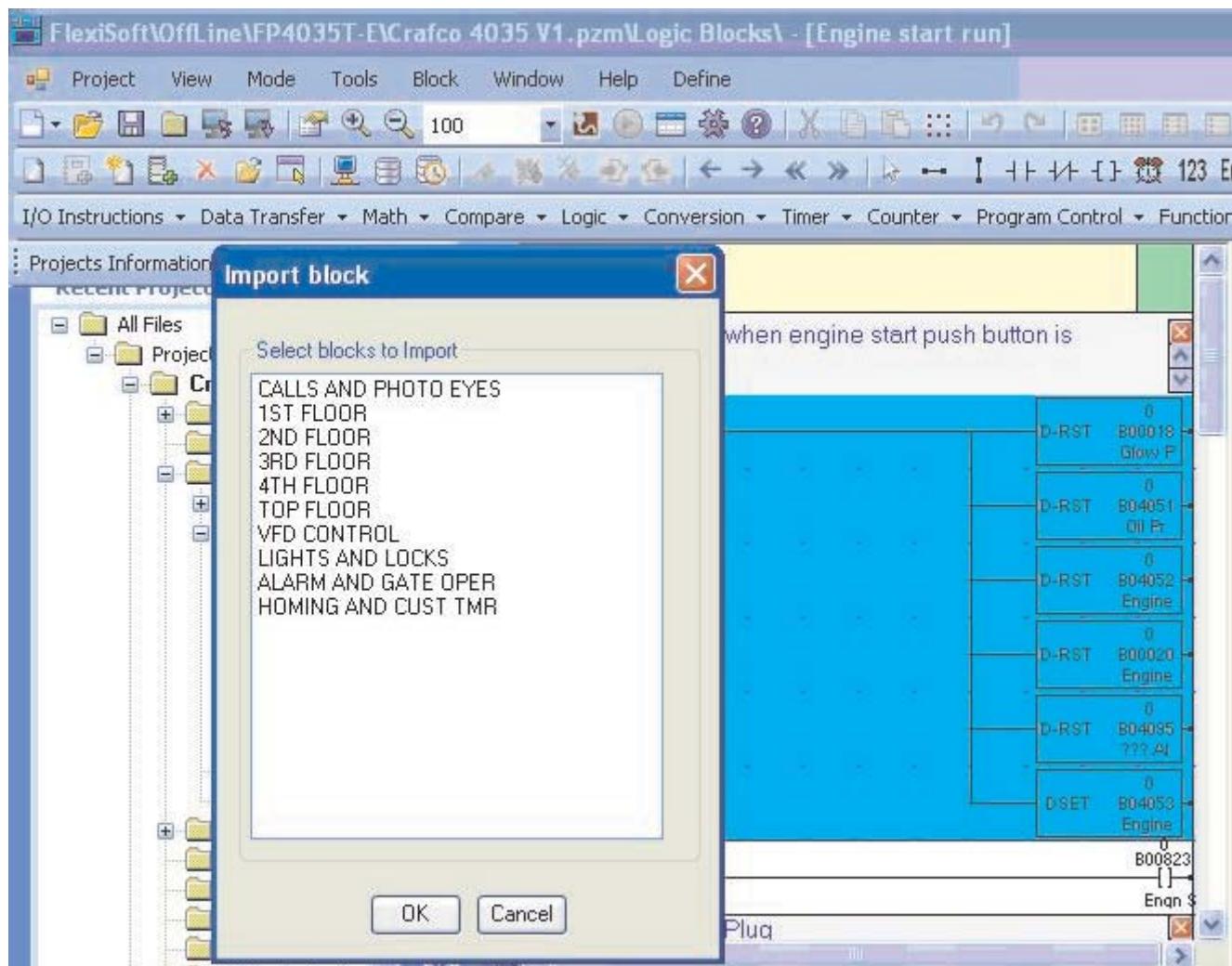
Import block is very useful for importing ladder logic blocks from other projects. Import block menu is located under block menu as shown below:



Click on import menu and select project file from which you need to import block as shown below



Selecting project file opens window with list of available blocks as shown below:



Select block or blocks to be imported and then click on OK to import blocks within application.  
Following message appears if blocks are imported successfully.



### 16.1.8 Delete Block

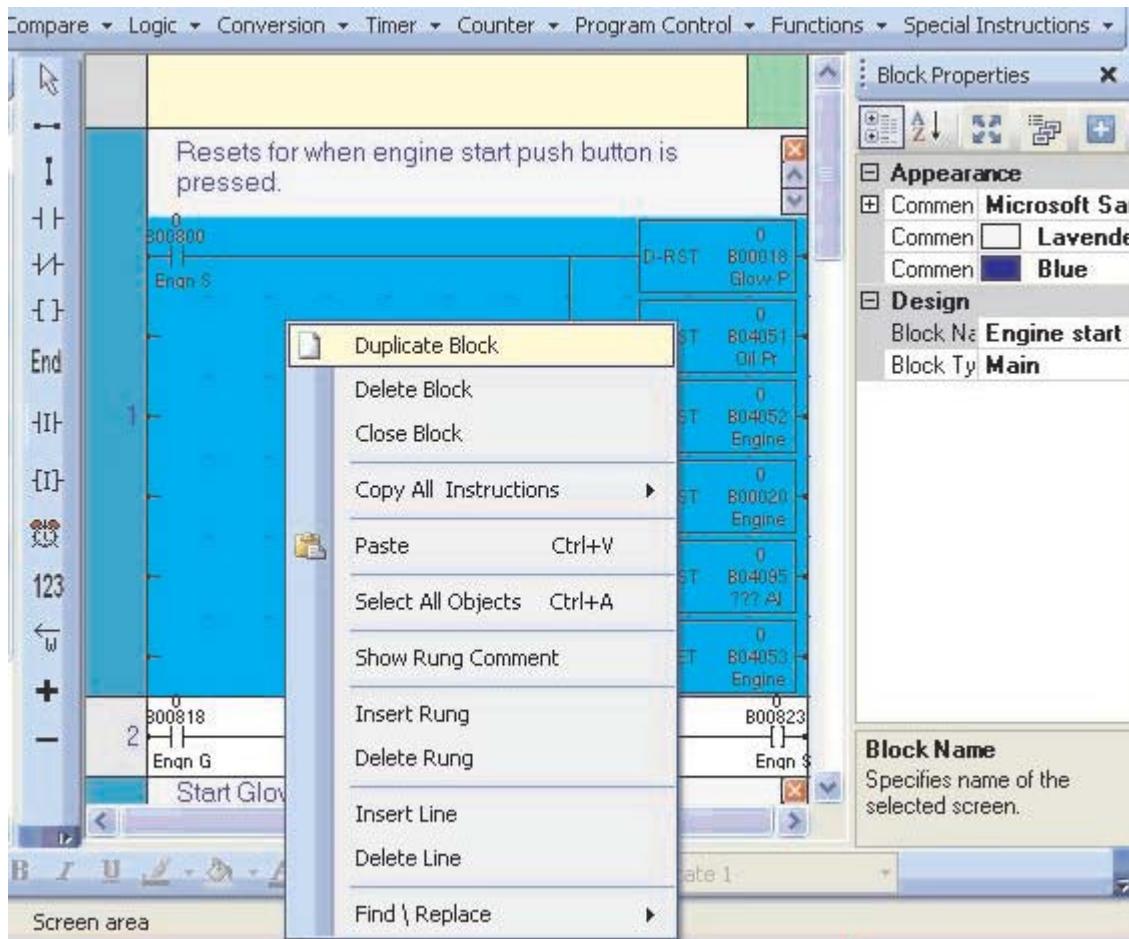
Delete block deletes block from list of available blocks.

**Mouse Right Click** on either in rung area or rung left margin area to activate Popup menu. Then click on delete block to delete block.

### 16.1.9 Duplicate Block

Duplicate block creates new block with same block information.

**Mouse Right Click** on either in rung area or rung left margin area to activate Popup menu as shown below:

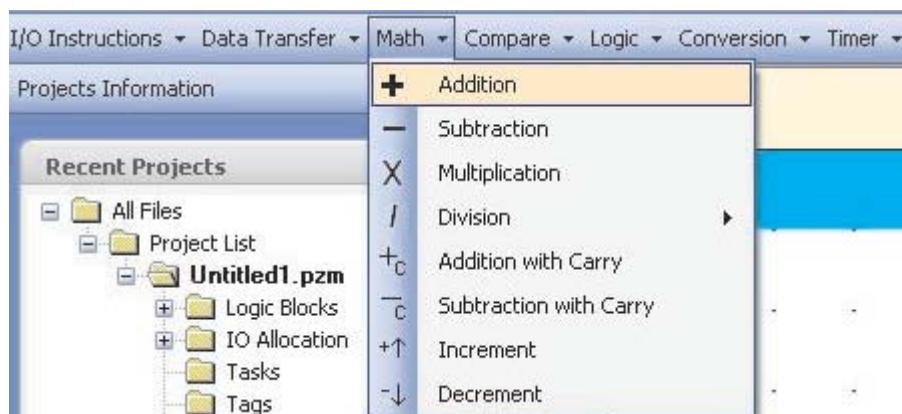


Then click on duplicate block to duplicate block.

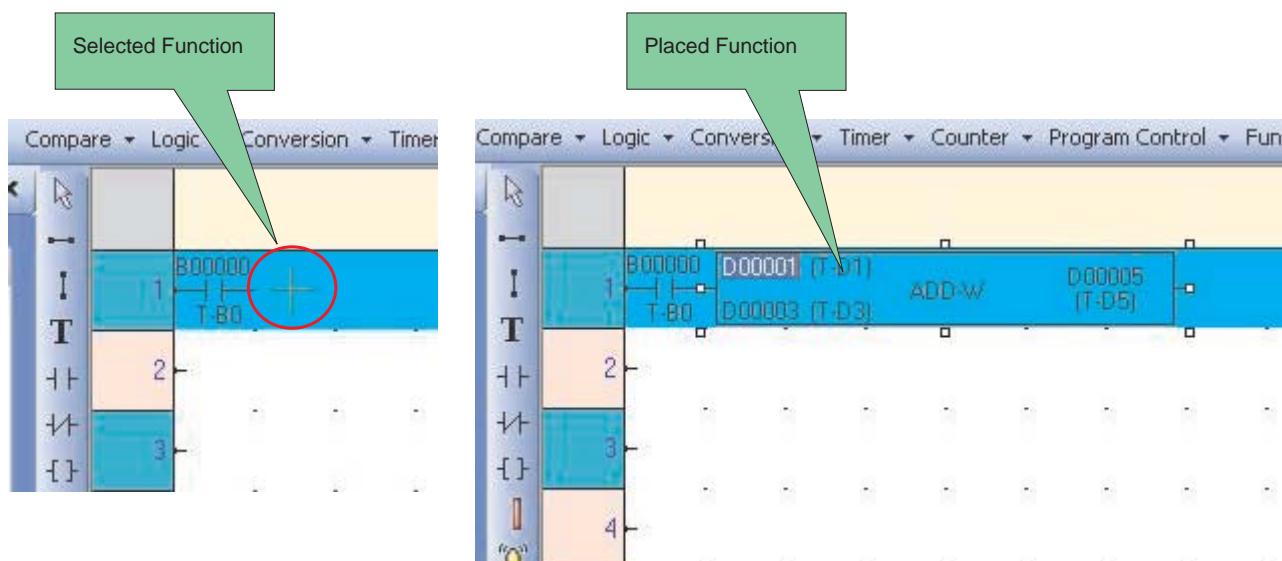
## 16.2 Placing function in a net

The procedure is as follows:

1. Select any type of ladder function either by ladder toolbar OR ladder menu as shown below:



2. Place the function in the selected rung as shown below:

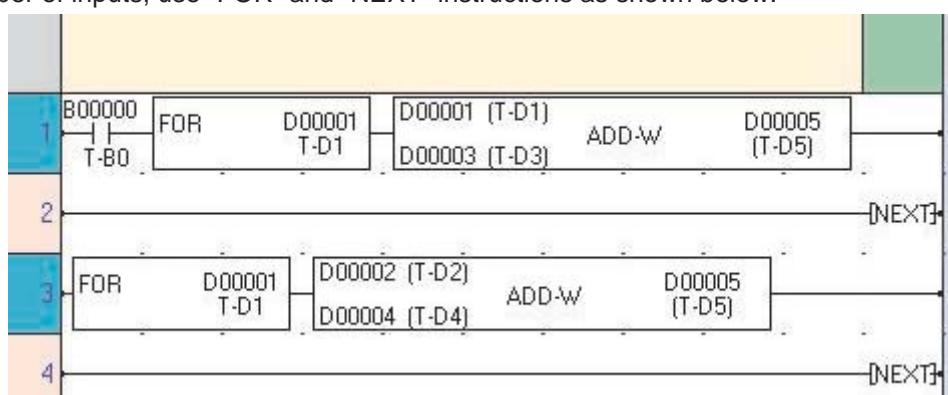


You can place the function anywhere in the ladder editor and then can move to the desired net location. Once the function placed in the net, operand and address dialogue box opens to the right side of the screen.

3. Link the desired operands.

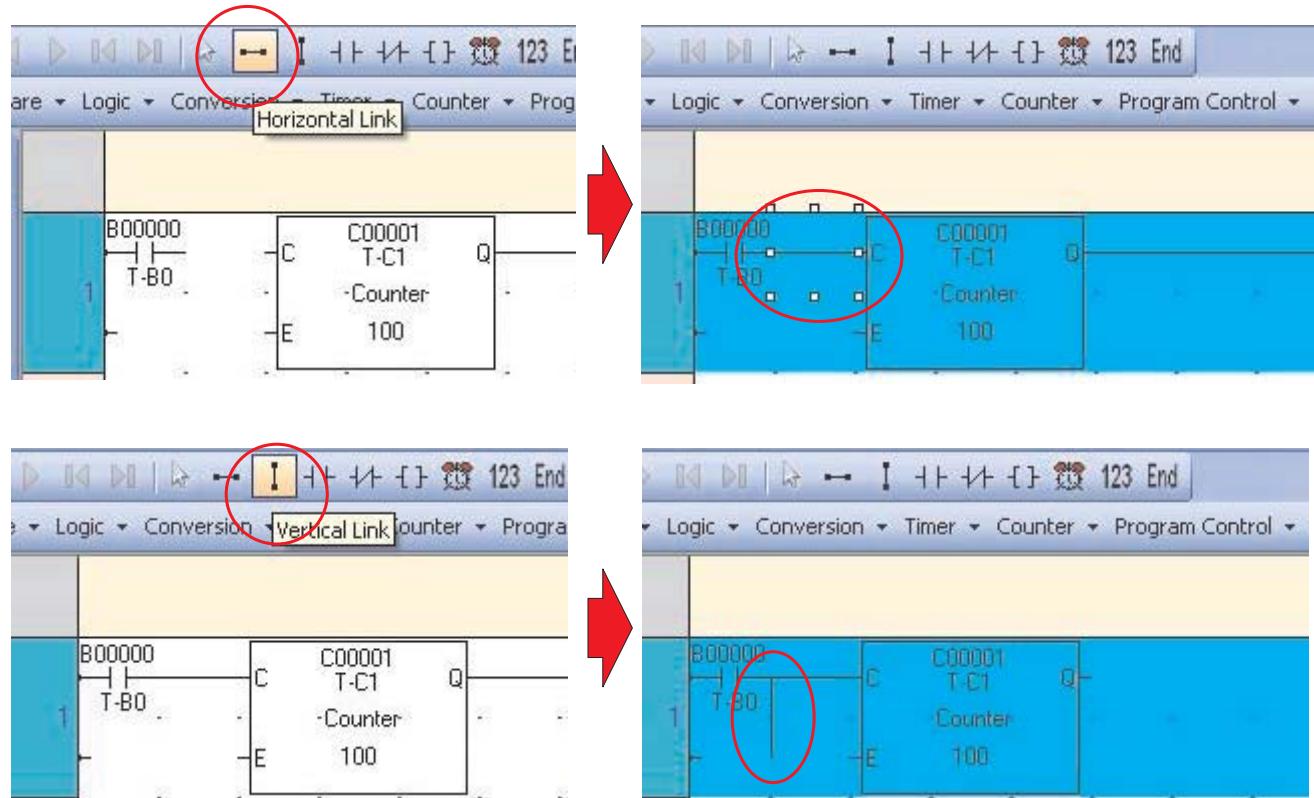
### Multiple Input Values in Math Functions

You can input multiple values into a math function block. The function will output a single sum. For increasing number of inputs, use "FOR" and "NEXT" instructions as shown below:



### Connecting Ladder Elements and Functions

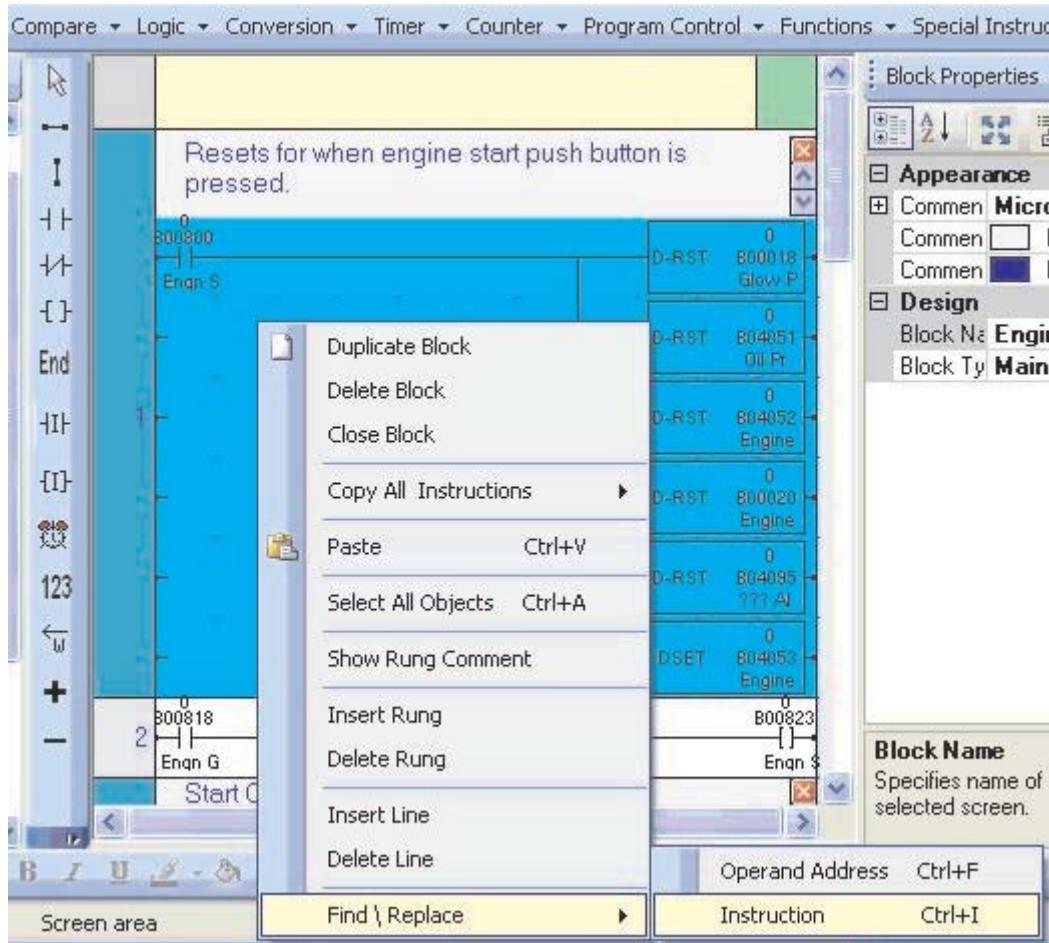
Use the Vertical Link and Horizontal Link tool to connect two or more elements or functions in a net. All net elements must be connected to allow power to flow through the net. If they are not connected, you will not be able to compile the project.



### 16.3 Search Instruction

Search instruction is useful for searching selected instruction within a block. Searching is supported by two ways either by instruction or by operand address/name.

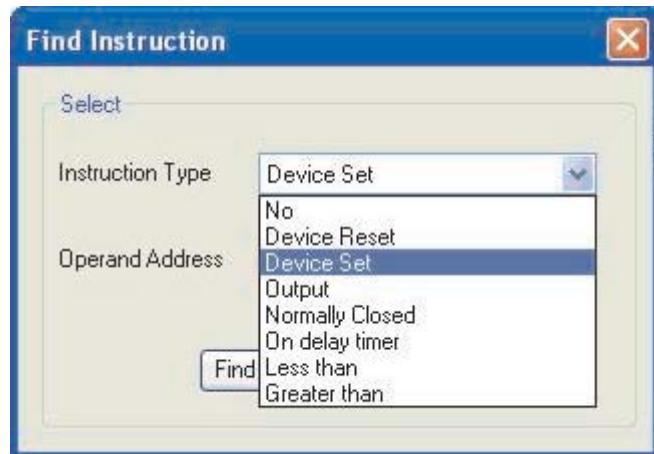
**Mouse Right Click** with in rung area to activate Popup menu as shown below. Then click on instruction to search instruction or Operand address to search an operand within instruction.



Search instruction can be also be activated from toolbar tool as shown below:

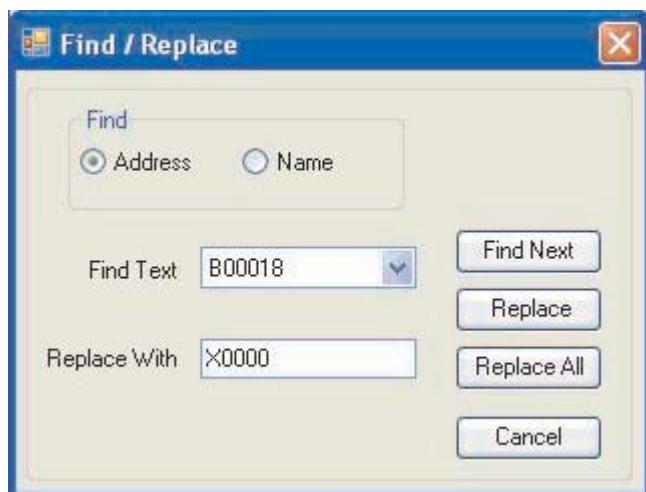


Clicking on search instruction opens following window:



Select instruction and click on Find to search. When instruction search is completed instruction and rung for instruction get selected.

Clicking on Find Operand address opens following window:



Using this window Find/replace operation can be done for selected operand address or Operand name for instructions within selected logic block. Select Replace to replace current occurrences and select Replace All to replace all occurrences within a block.

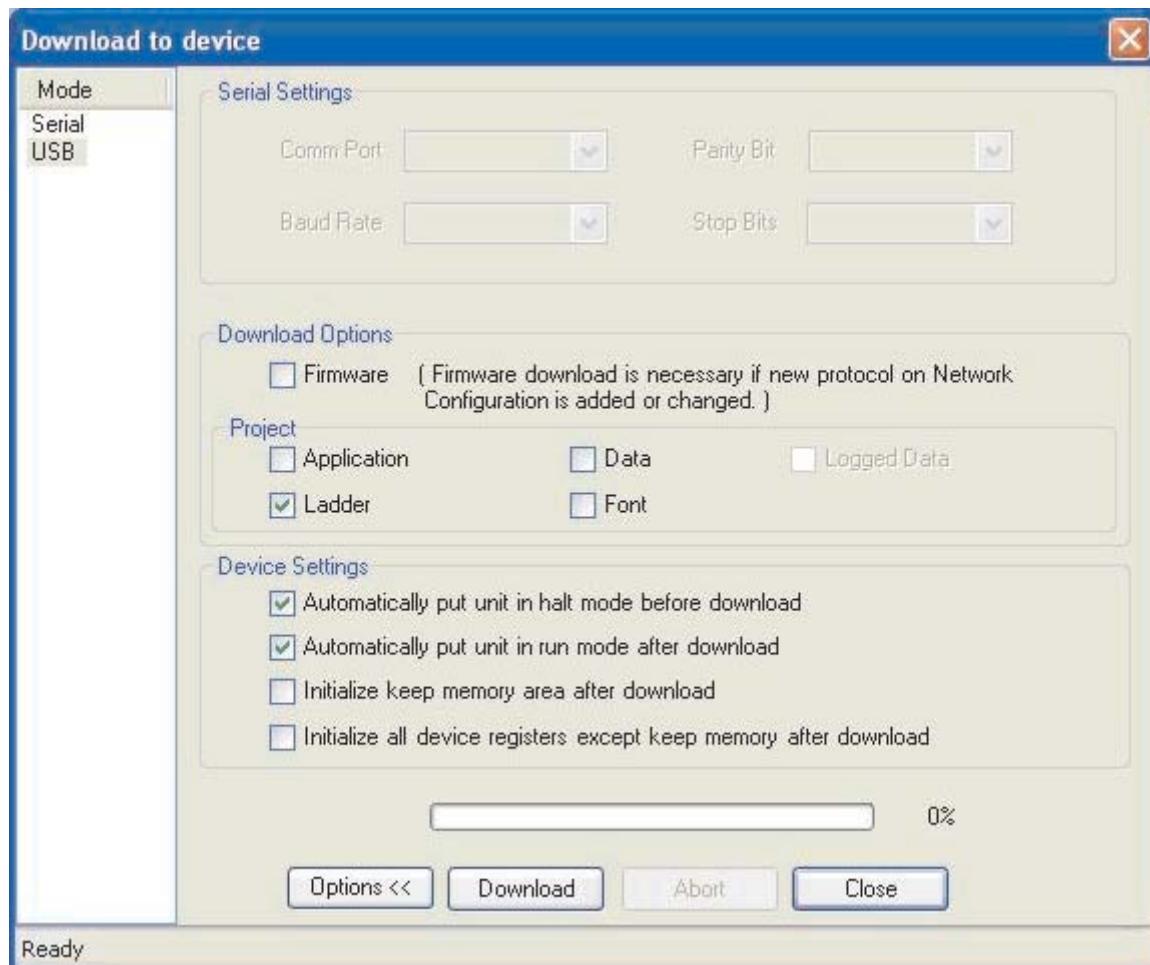
## 16.4 Ladder Download

For downloading ladder to device click on download tool from toolbar as shown below:



Clicking on download opens download window as shown below.

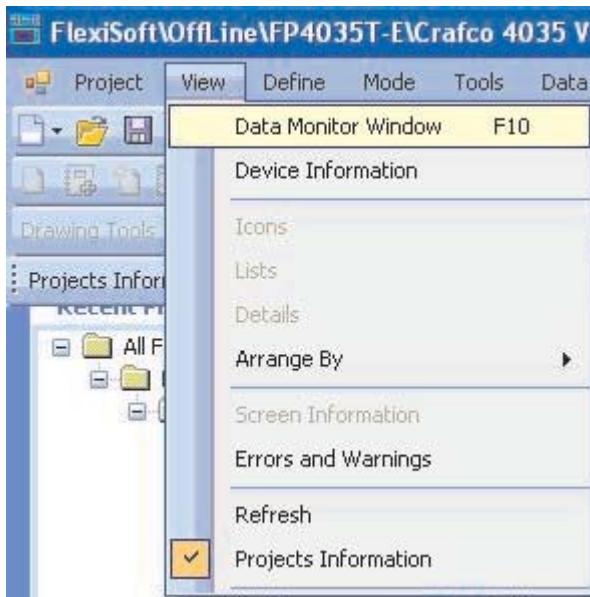
Note if there are **errors** during **ladder compilation** then download window does not open up rather error window is displayed. All errors must be resolved in order to open download window.



It is important to check **download options** and **device settings** before you click download button.

## 16.5 Data Monitor

Data monitor window is useful to view device data or to initialize unit memory data.  
To view data monitor window click Data monitor window under **View Menu** as shown below:

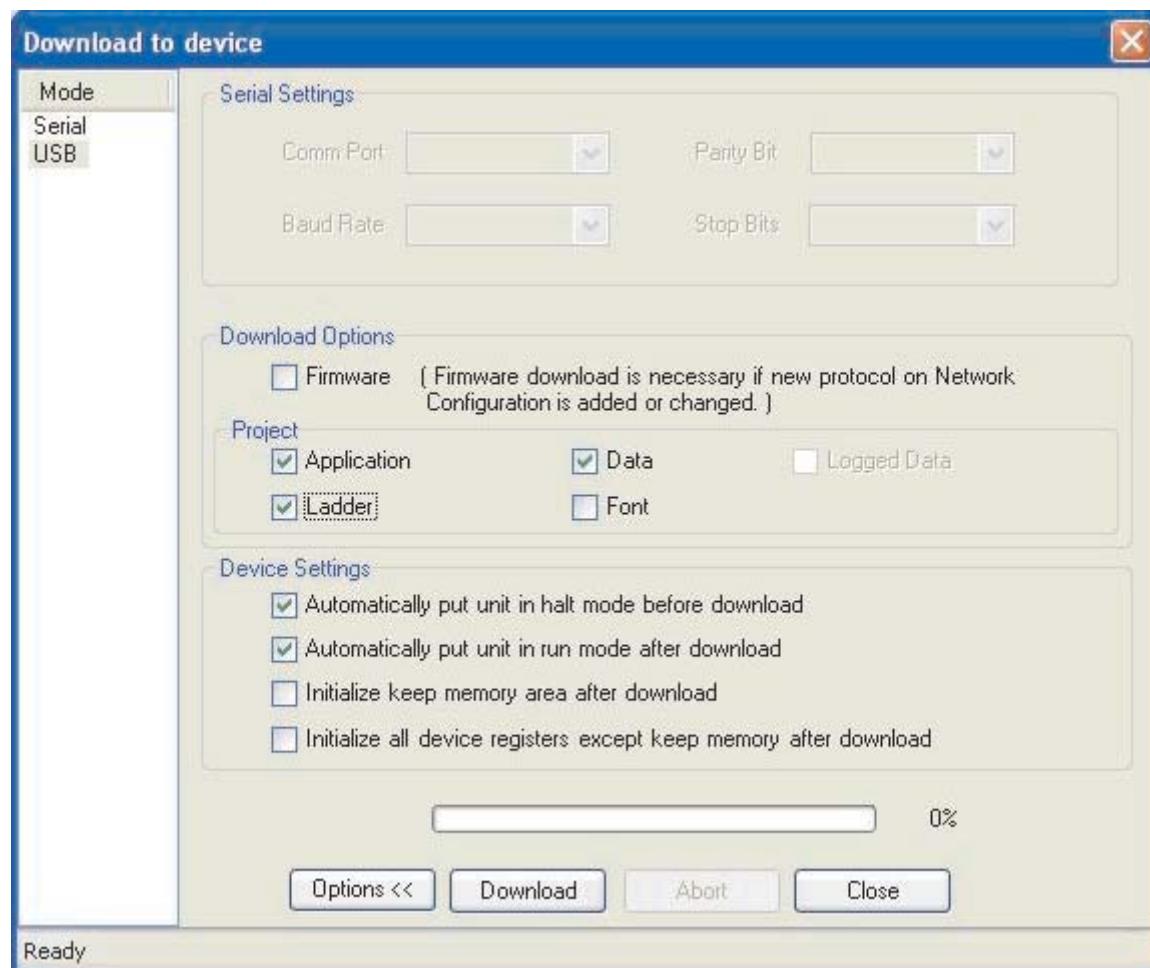


In **on line mode** data window can be used to monitor device data. User needs to define block of data which he desire to monitor. Block is set of sequential operand addressees with predefined block size.  
To define new block right click data window to view Popup menu as shown below:

Address	Value	Binary Value	Data Type	Data Size
D00000	000100	00000000001100100	Signed	2 bytes
D00001	000100	00000000001100100	Signed	2 bytes
D00002	000000	00000000000000000000	Signed	2 bytes
D00003	000000	00000000000000000000	Signed	2 bytes
D00004	000000	00000000000000000000	Signed	2 bytes
D00005	000000	00000000000000000000	Signed	2 bytes
D00006	000000	00000000000000000000	Signed	2 bytes
D00007	000000	00000000000000000000	Signed	2 bytes
D00008	000000	00000000000000000000	Signed	2 bytes
D00009	000456	00000000111001000	Signed	2 bytes
D00010	000000	00000000000000000000	Signed	2 bytes
D00011	000000	00000000000000000000	Signed	2 bytes
D00012	000000	00000000000000000000	Signed	2 bytes
D00013	000000	00000000000000000000	Signed	2 bytes
D00014	000000	00000000000000000000	New Block	
D00015	009999	0010011100001111	Delete Block	
B00000	000001	0000000000000001	Edit Block	
B00001	000000	0000000000000000	Import Data	
B00002	000000	0000000000000000	Export Data	
B00003	000000	0000000000000000		
B00004	000001	0000000000000001		
B00005	000000	0000000000000000		
B00006	000000	0000000000000000		
B00007	000000	0000000000000000		
B00008	000000	0000000000000000		

Edit block can be used to modify properties of existing block. Import/Export can be used to share data across different projects.

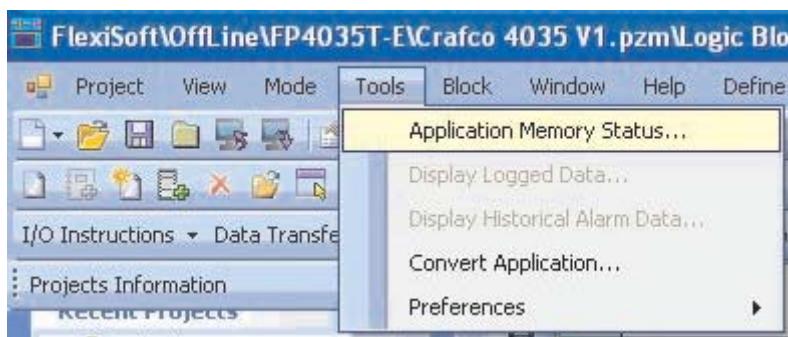
In **offline mode** user can configure operand values of unit memory with predefined set of values. By this way user can initialize device memory. This predefined data can be then **downloaded** to unit using data download option located in download Window as shown below:



Note with current version data download is supported on USB port only.

## 16.6 Ladder Memory

Ladder memory status displays available ladder memory and used ladder memory for current project. Click on **application memory status** menu located under **Tools** menu as shown below:



Clicking on application memory status opens following window:

**Memory Status**

Over all Memory Details				Logger Memory Details		Ladder Memory Details			
Memory	Bytes	KB	Percentage	Memory Allocated :		Memory	KB	Steps	Percentage
Available	8388608	8192	100	0	KB	Available	96	16384	100
Used	531737	519.274	6.33			Used	0.02	4	0.02
Free	7856871	7672.726	93.66			Free	95.97	16380	99.97

**Application Details**

Definition Type	Total	Bytes
Nodes	5	5666
Screens	8	37263
Keys	0	0
Alarms	0	0
Power on Tasks	1	6
Global Tasks	1	55
Data Logger	0	165
Blocks to be Read	0	0
Tag Names	218	3052
Historical Alarm Memory	1	65536
Other Bytes	-	485530

\* Please save project to get current memory status

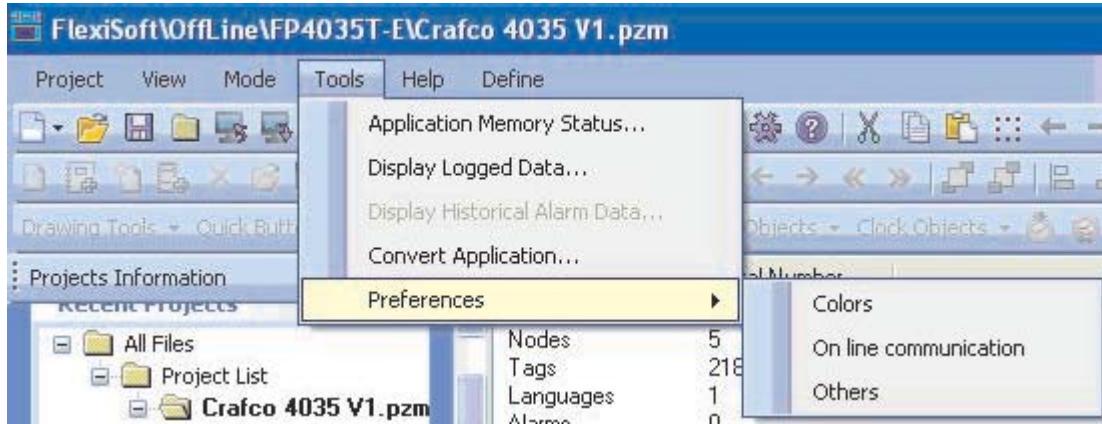
Note project must be either saved or downloaded in order to view correct memory settings.

Ladder memory is displayed in both KB and steps. 1 step is equal to 6 bytes.

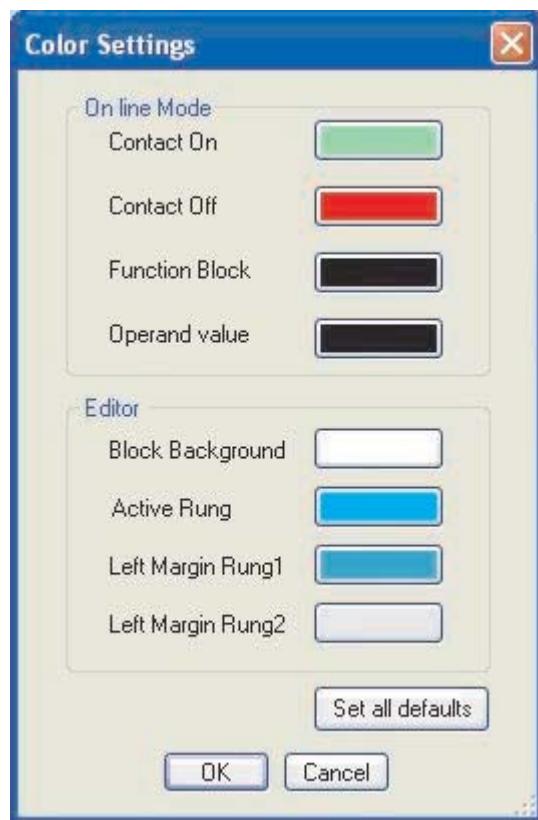
## 16.7 Preference

Preferences define ladder editor global settings. These settings are global i. e. settings once set are same for all new and opened projects. Also these settings are retained even if application is close or exit.

To view preferences click on Preferences sub menu under Tools menu as shown below:



Color preferences defines editor color settings such as block background, active rung color, contact color etc. as shown below:



Note: Using Set all defaults you can restore default settings.

Other settings defines settings such as instruction **operand name length** to be displayed in **ladder block**, default tags name message window and overlapping error message window etc.



Check these settings to view these messages or uncheck to hide these message windows.

## LADDER

In this chapter. . . .

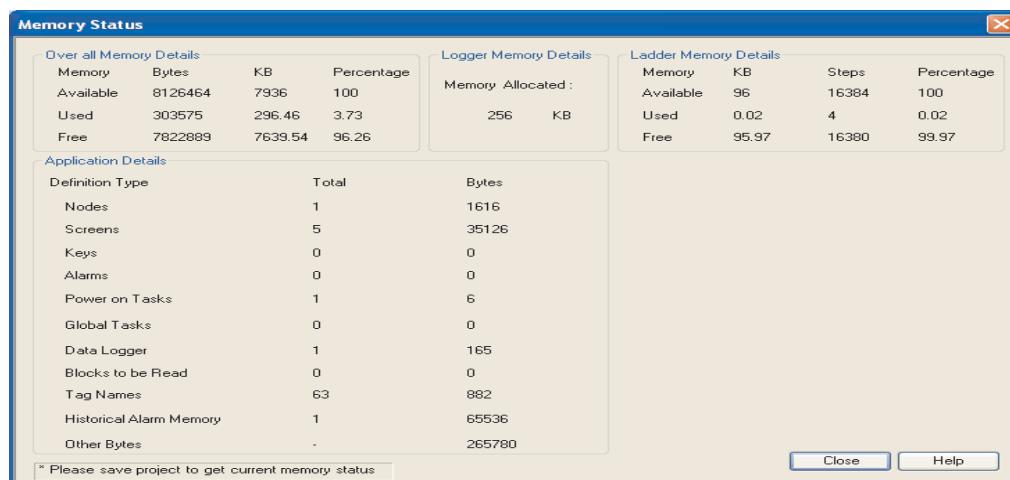
- \* Launching Ladder Text Editor
- \* Creating ladder

## 17.1 Procedure to launch ladder in FlexiSoft

Launch FlexiSoft setup software on your PC. Below shown welcome screen will display.



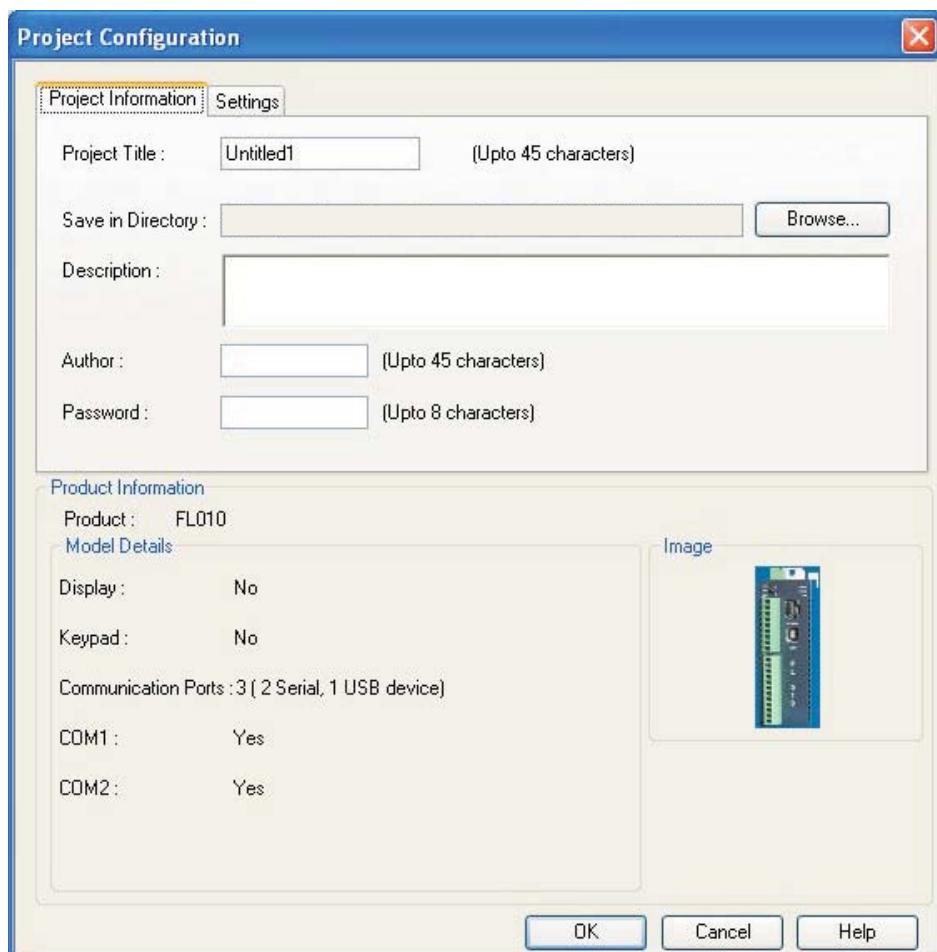
To launch a ladder application either choose Project -> New option or click on New application icon as shown below:



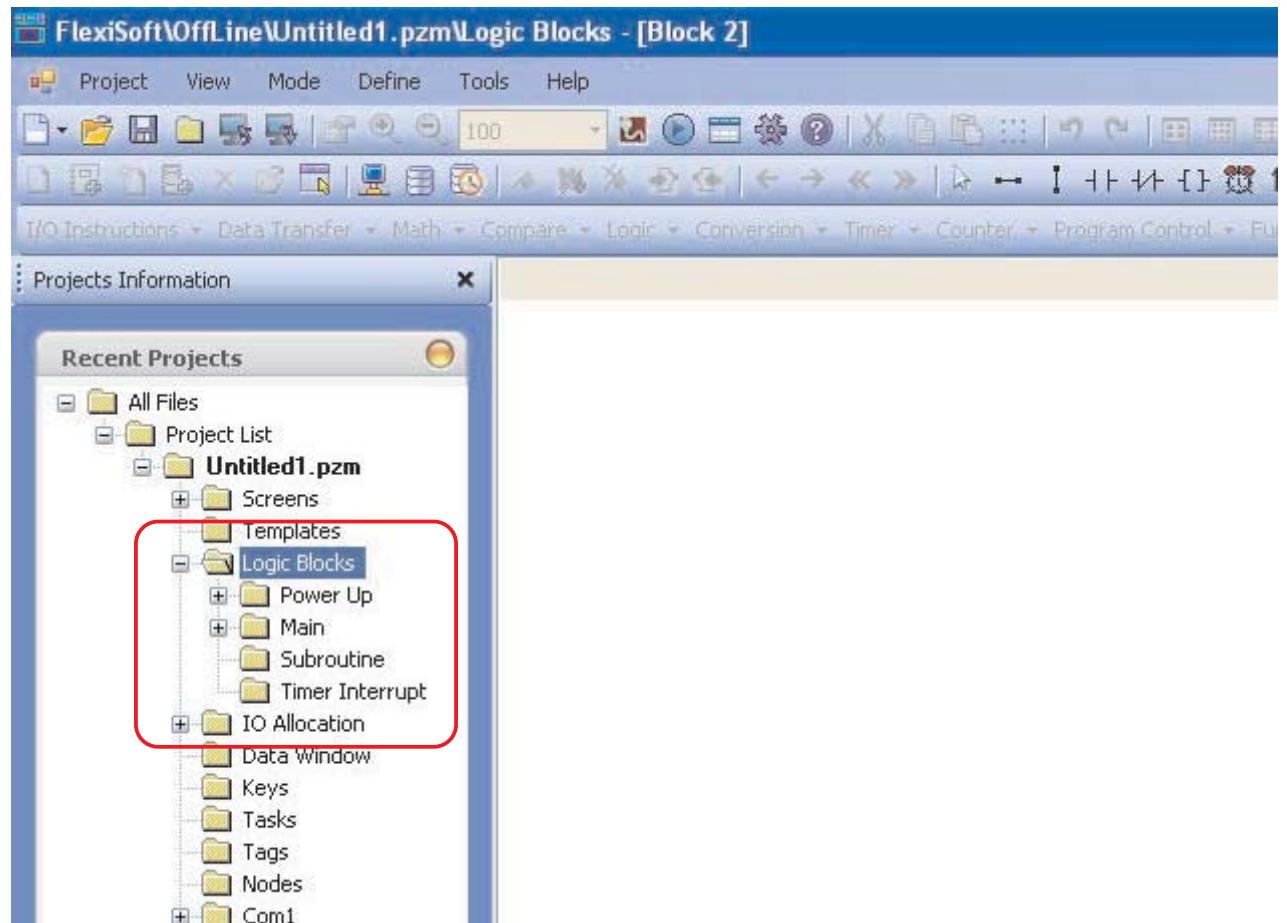
Following screen will appear:

Tag No	Tag Name	Port	Tag Address	Byte(s)	Node Name	Tag Type
32	Unit default gateway hi word	-	MW0038	2	Operator Panel	Default Tag
33	Carry bit	-	S00000	bit	Operator Panel	Default Tag
34	Invalid RTC date entry	-	S00019	bit	Operator Panel	Default Tag
35	COM1: failed node reconnect control	-	S00021	bit	Operator Panel	Default Tag
36	COM2: failed node reconnect control	-	S00022	bit	Operator Panel	Default Tag
37	COM3: failed node reconnect control	-	S00023	bit	Operator Panel	Default Tag
38	Ladder instruction error status	-	S00034	bit	Operator Panel	Default Tag
39	COM 3 status	-	SW0003_13	2	Operator Panel	Default Tag
40	COM 1 status	-	SW0003_14	bit	Operator Panel	Default Tag
41	COM 2 status	-	SW0003_15	bit	Operator Panel	Default Tag
42	RTC day of month	-	SW0010	2	Operator Panel	Default Tag
43	RTC month	-	SW0011	2	Operator Panel	Default Tag
44	RTC year	-	SW0012	2	Operator Panel	Default Tag
45	RTC hour	-	SW0013	2	Operator Panel	Default Tag
46	RTC min	-	SW0014	2	Operator Panel	Default Tag
47	RTC sec	-	SW0015	2	Operator Panel	Default Tag
48	RTC day of week	-	SW0016	2	Operator Panel	Default Tag
49	Scan time register	-	SW0017	2	Operator Panel	Default Tag
50	COM1: failed node reconnect time (sec)	-	SW0018	2	Operator Panel	Default Tag

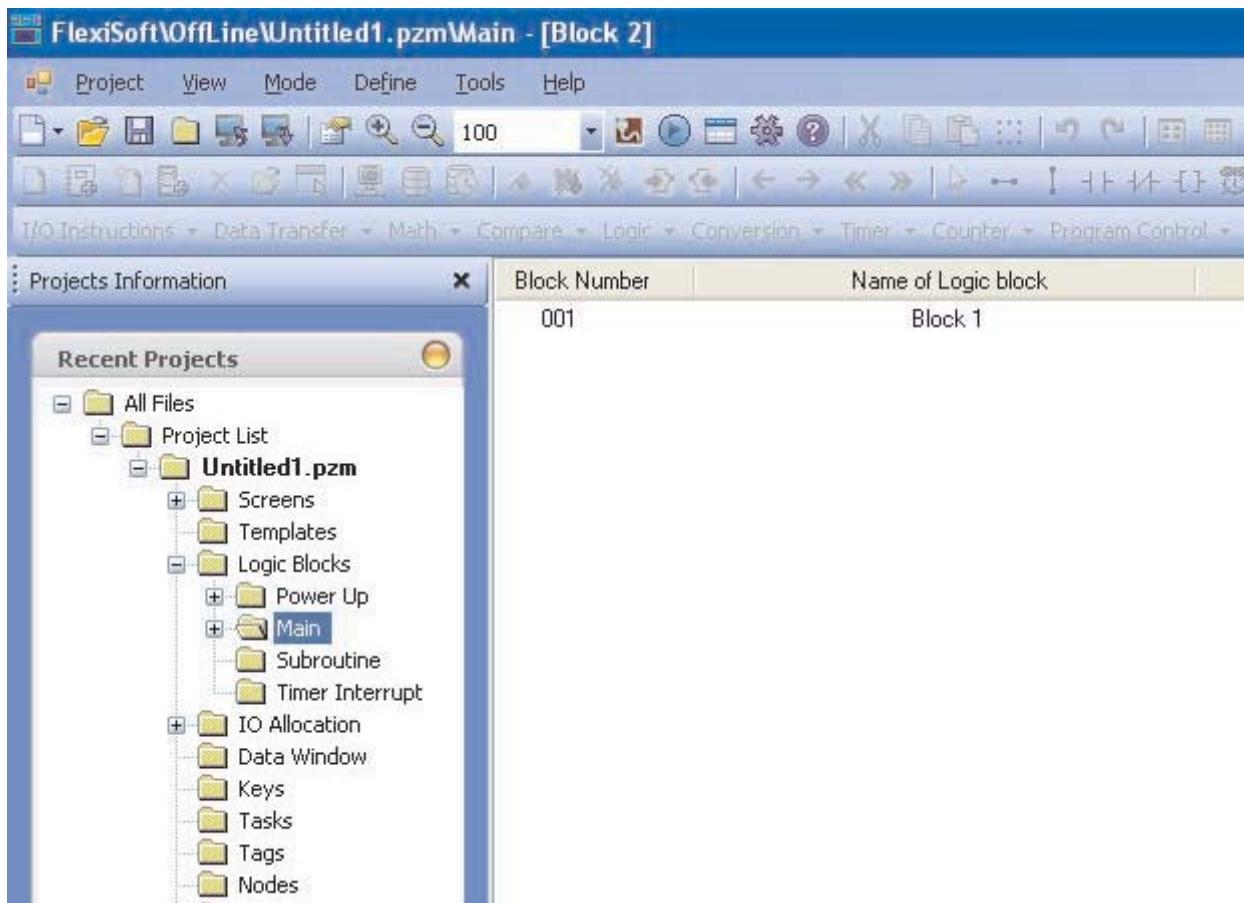
Click on “OK” button. In the next appearing window, write Project Title and click on “OK” button as shown below:



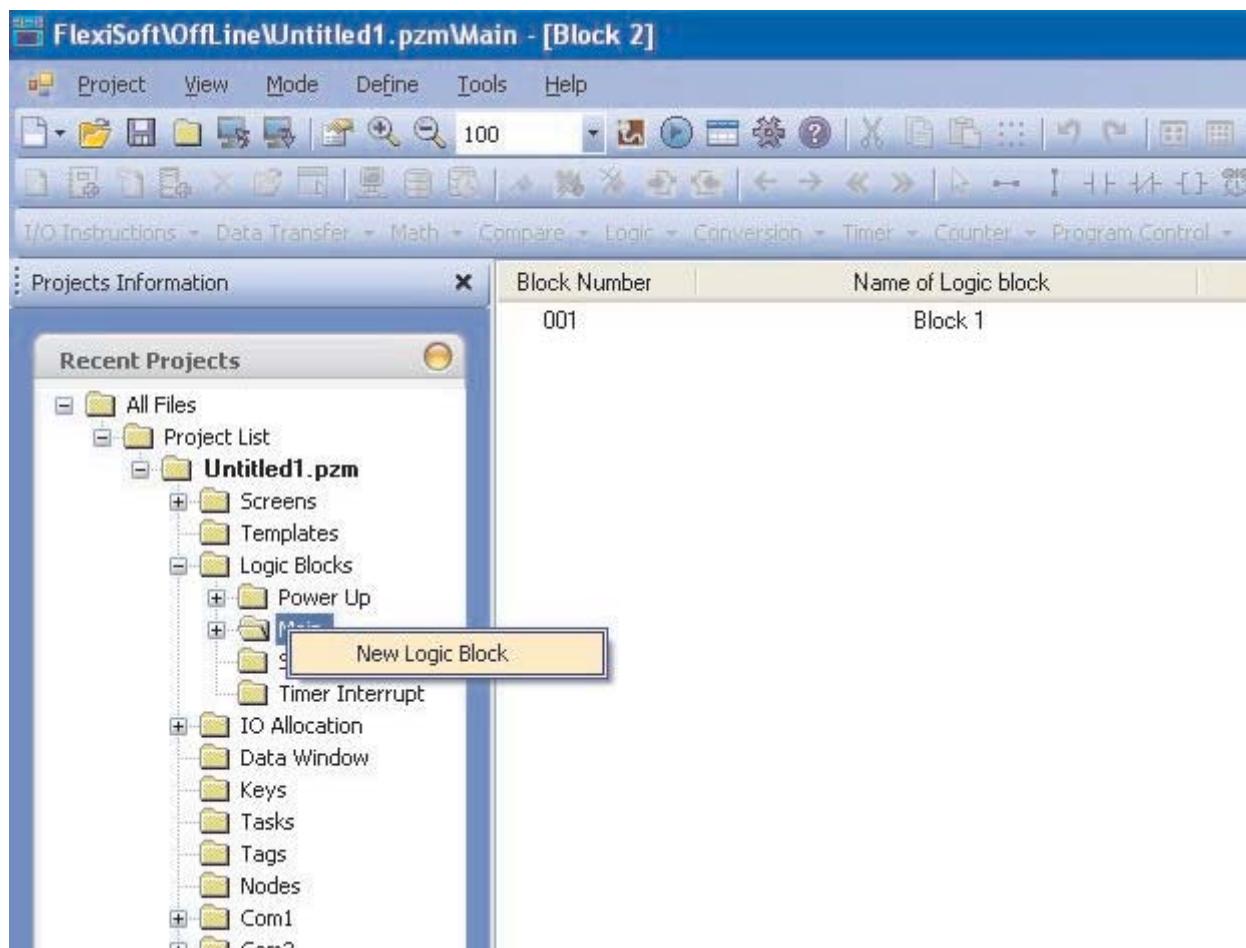
Following screen will appear:



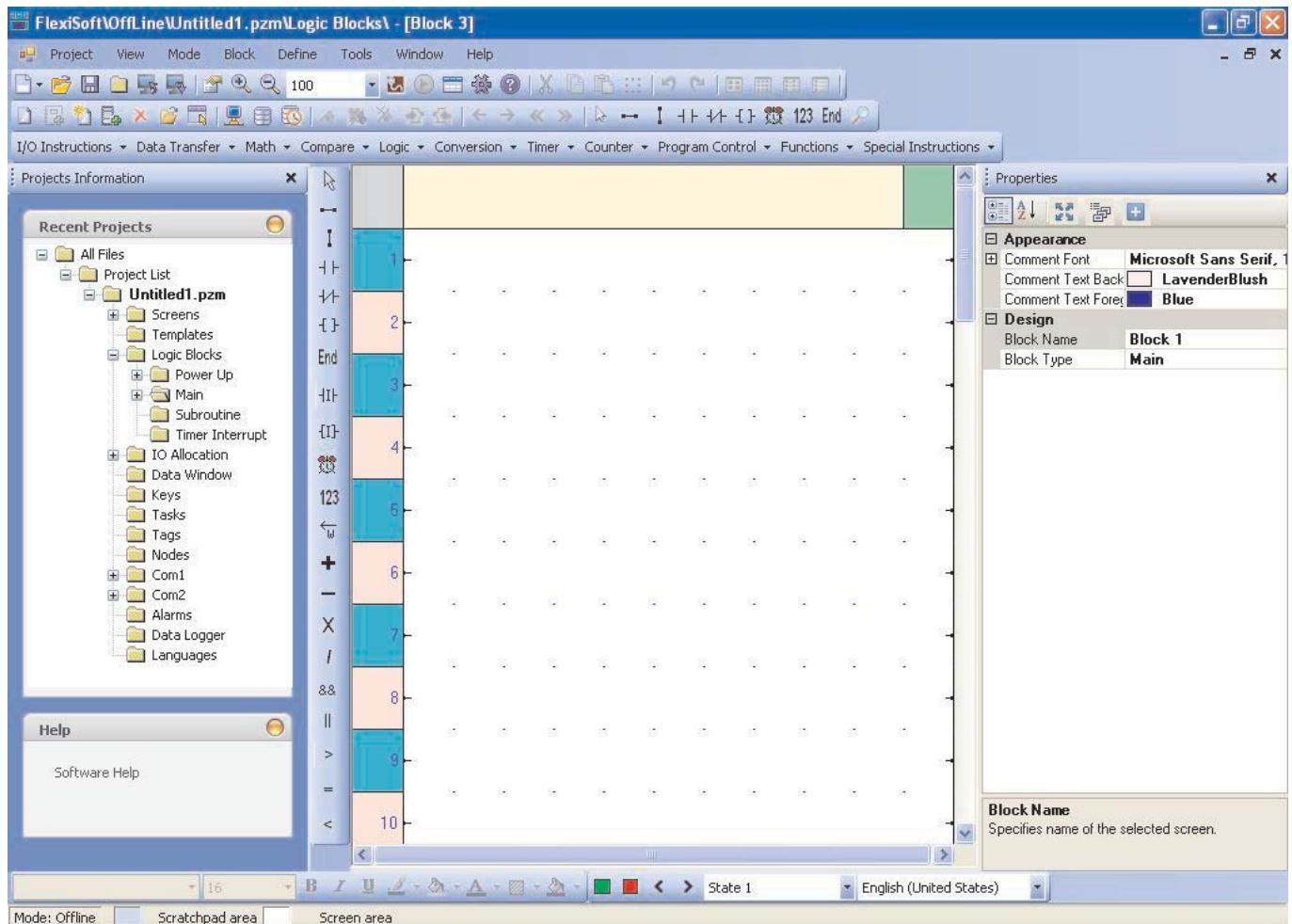
Now, explore Logic Block and go to main as shown below:



Right click on Main and Select New Logic Block as shown:



A ladder Text Editor appears as shown below:

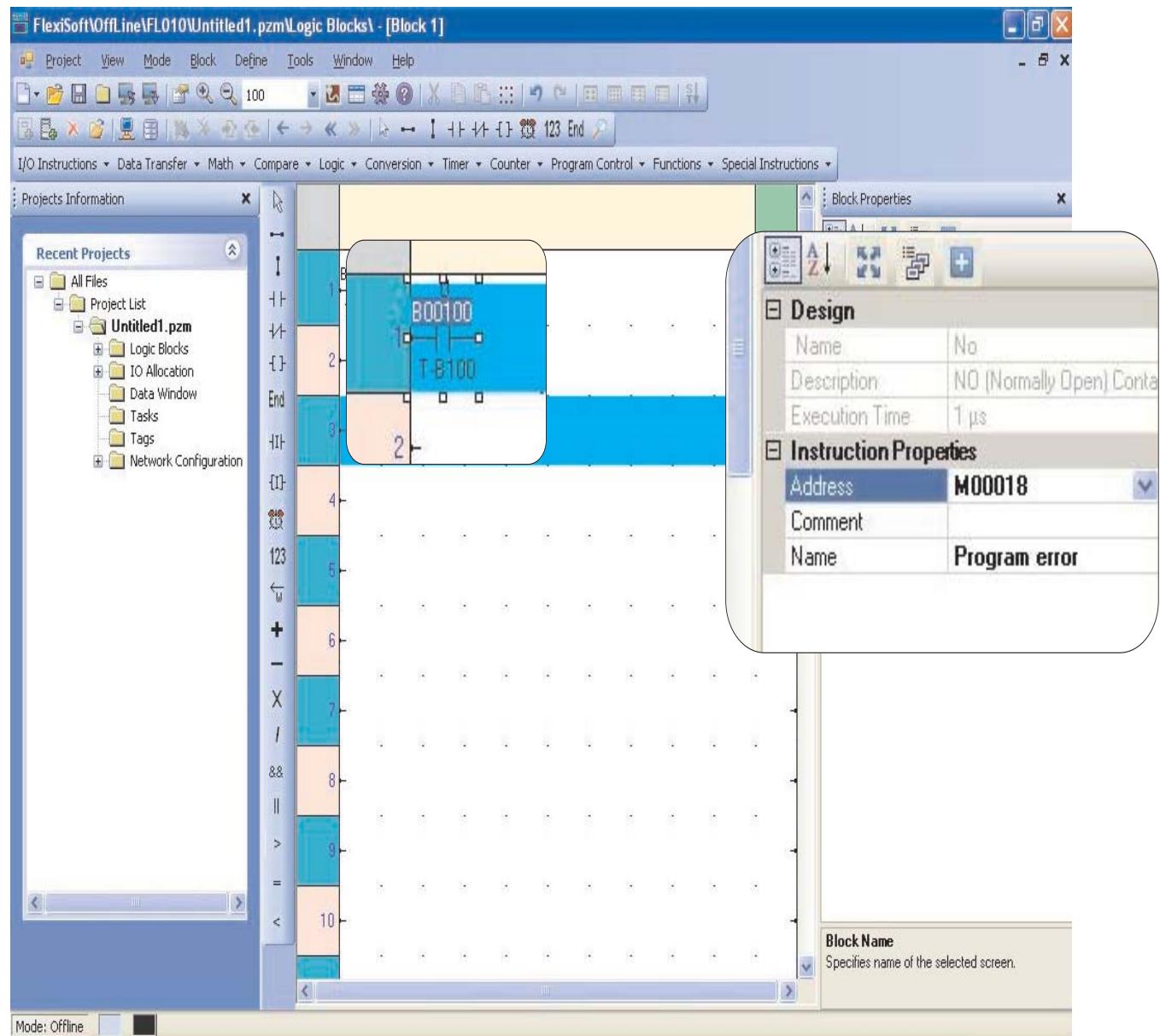


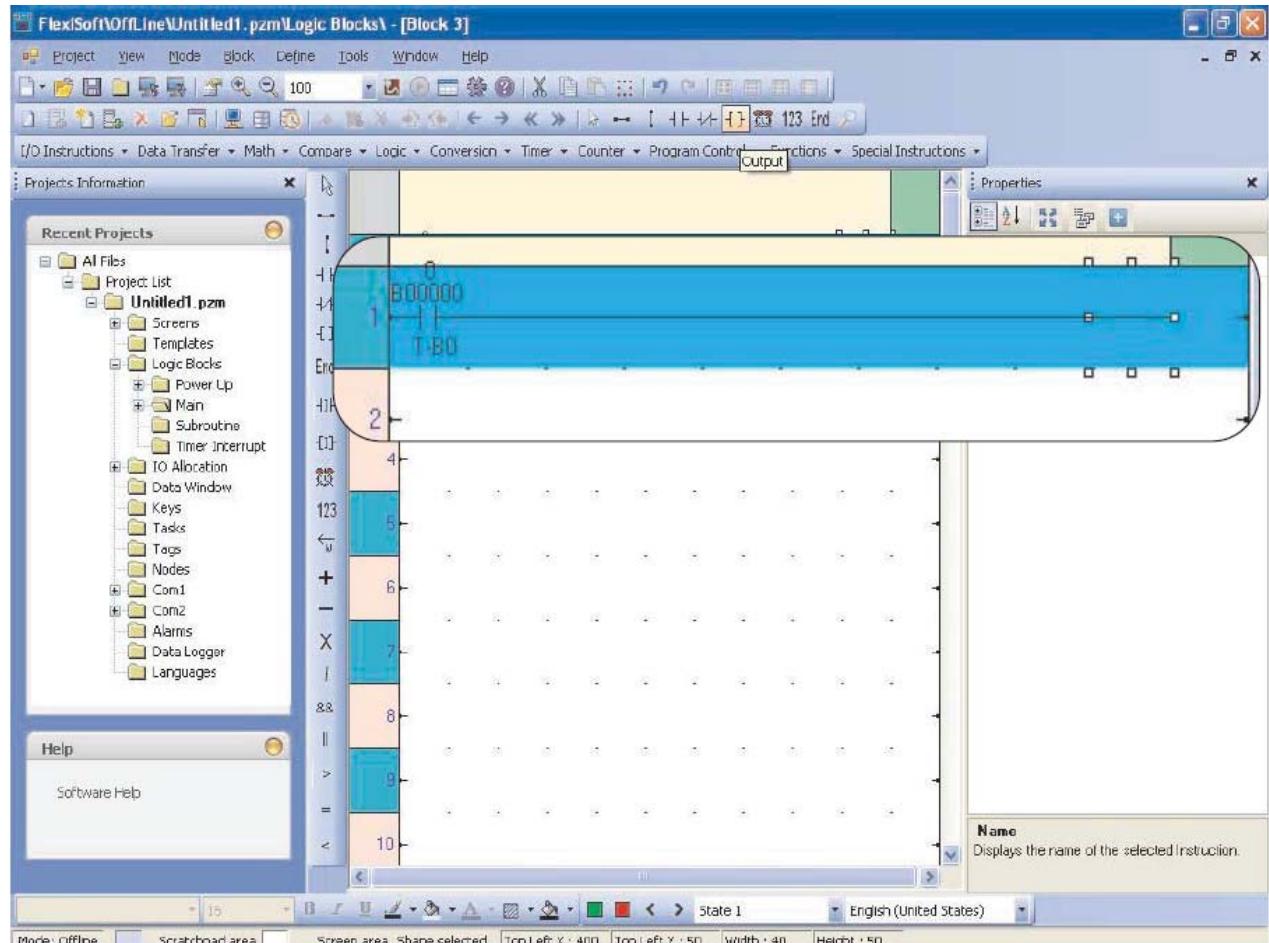
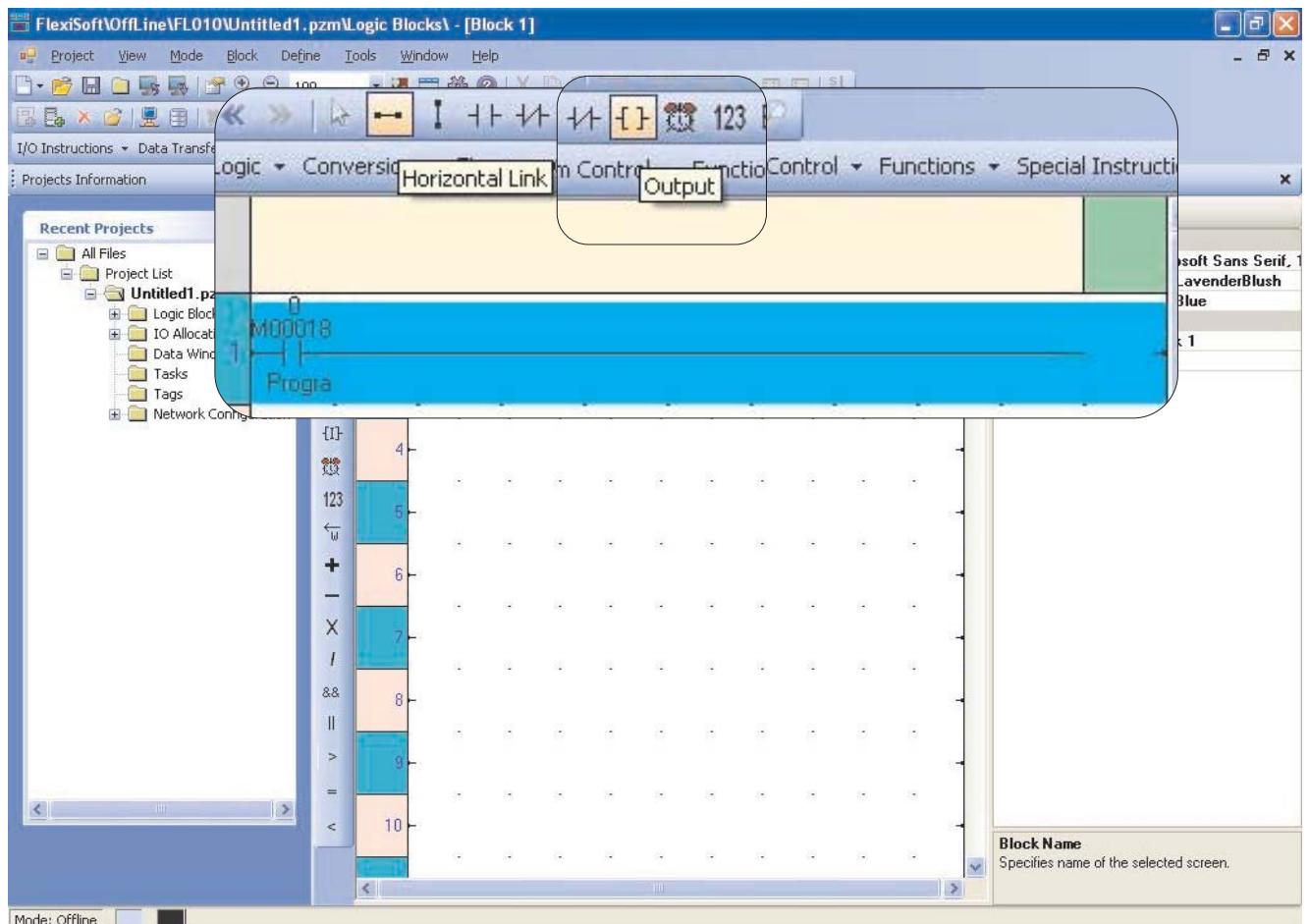
Now here you can create your ladder

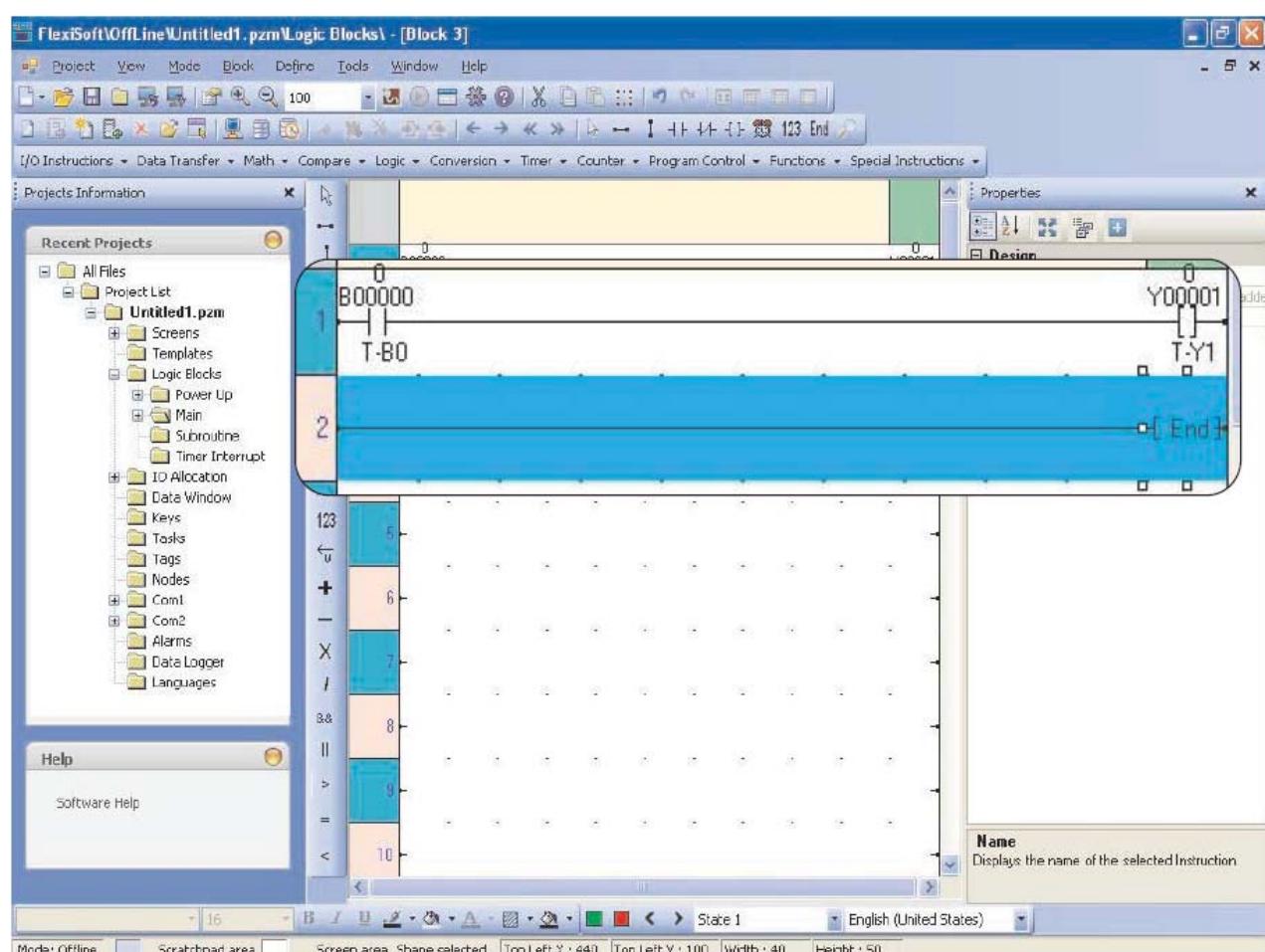
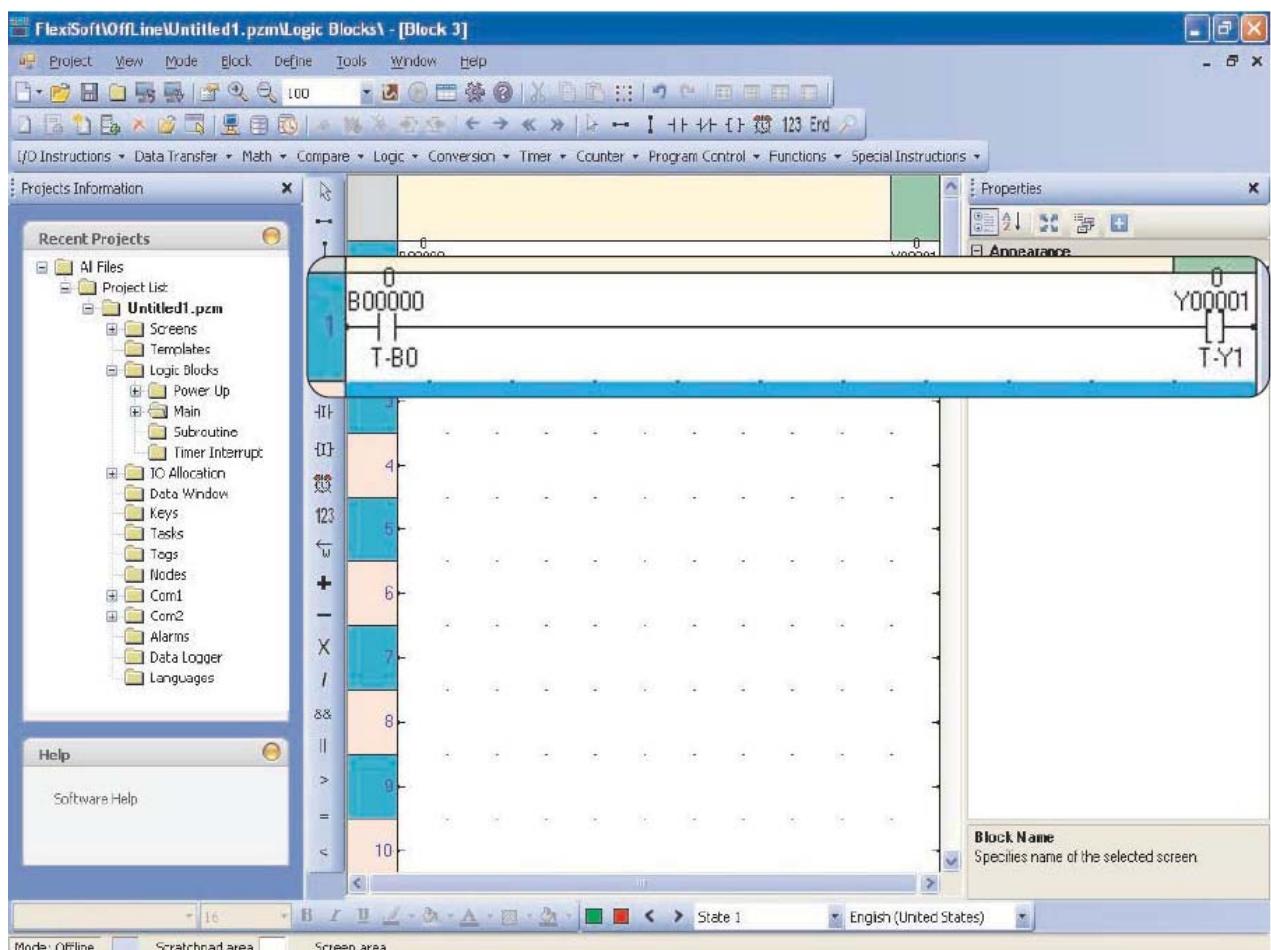
## 17.2 Creating sample ladder

After launching Ladder Text Editor, you can create a ladder here. Steps are shown below:

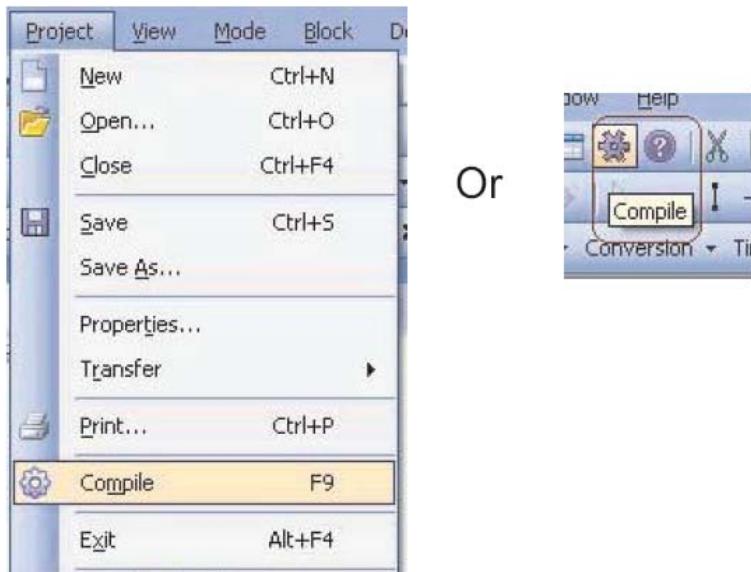
Step-1:



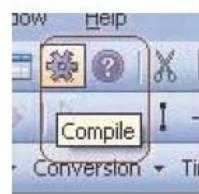




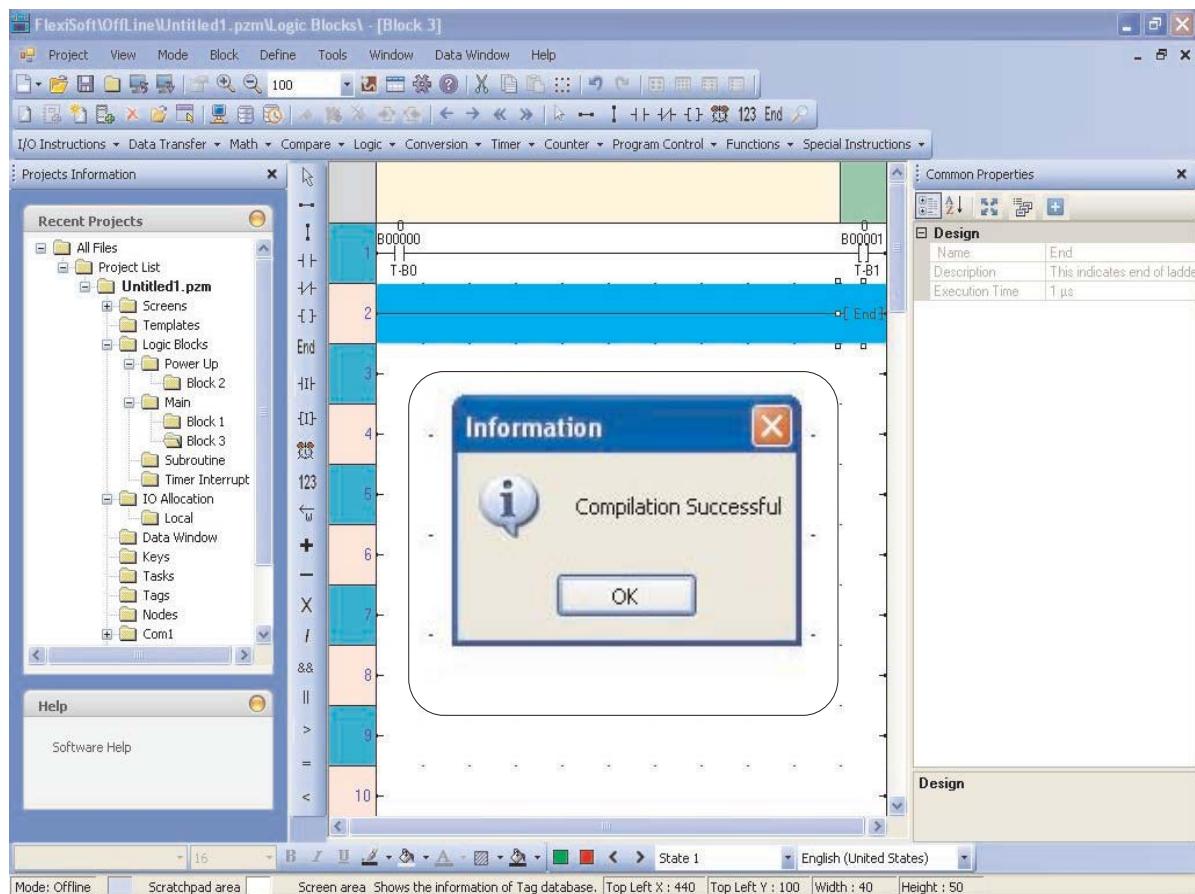
After completing ladder, Compile it as shown below:



Or



Following screen will appears if compilation is successful.

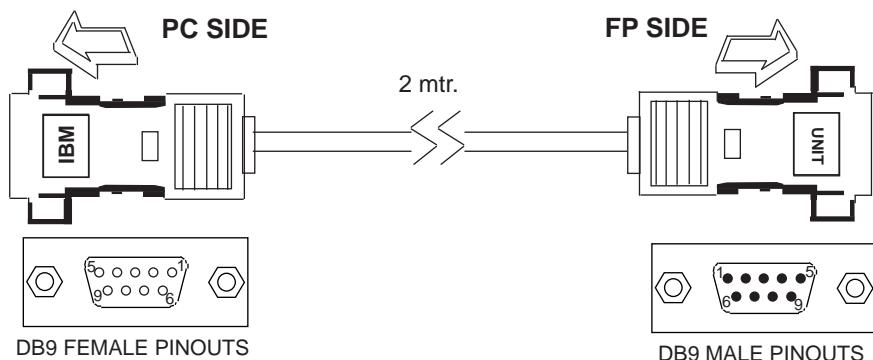


## APPENDIX

In this chapter. . . .

- \* IBM Cable
- \* Special “Y” cable for two communication level on one port
- \* Communication Cables

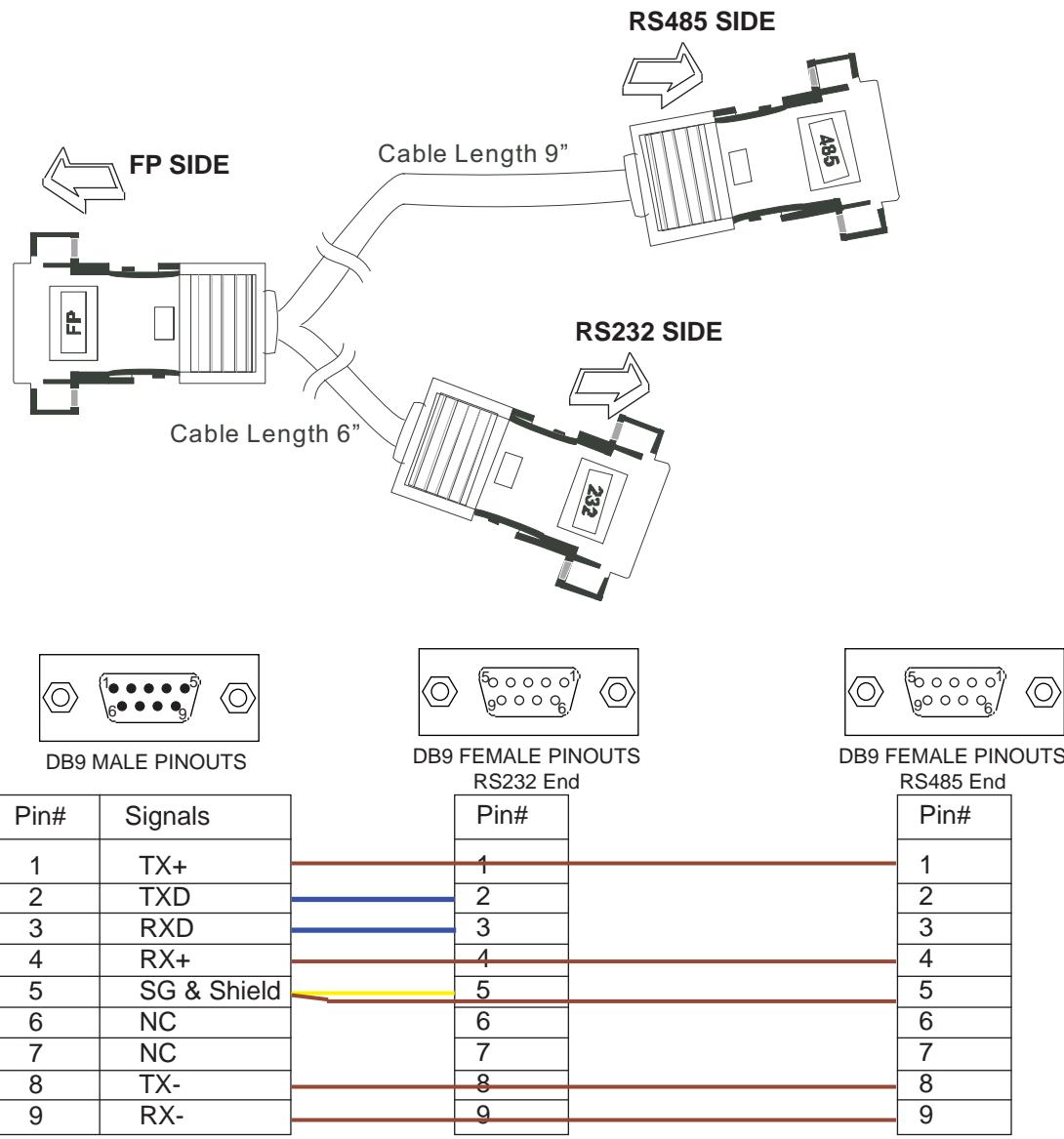
## 18.1 Programming cable for ARGOS FP units



Signals	Pin#
	1
RXD	2
TXD	3
	4
SG & Shield	5
	6
	7
	8
	9

Pin#	Signals
1	
2	TXD
3	RXD
4	
5	SG & Shield
6	
7	
8	
9	

## 18.2 Special "Y" cable for FP\* unit (two communication levels on one port)



Note:

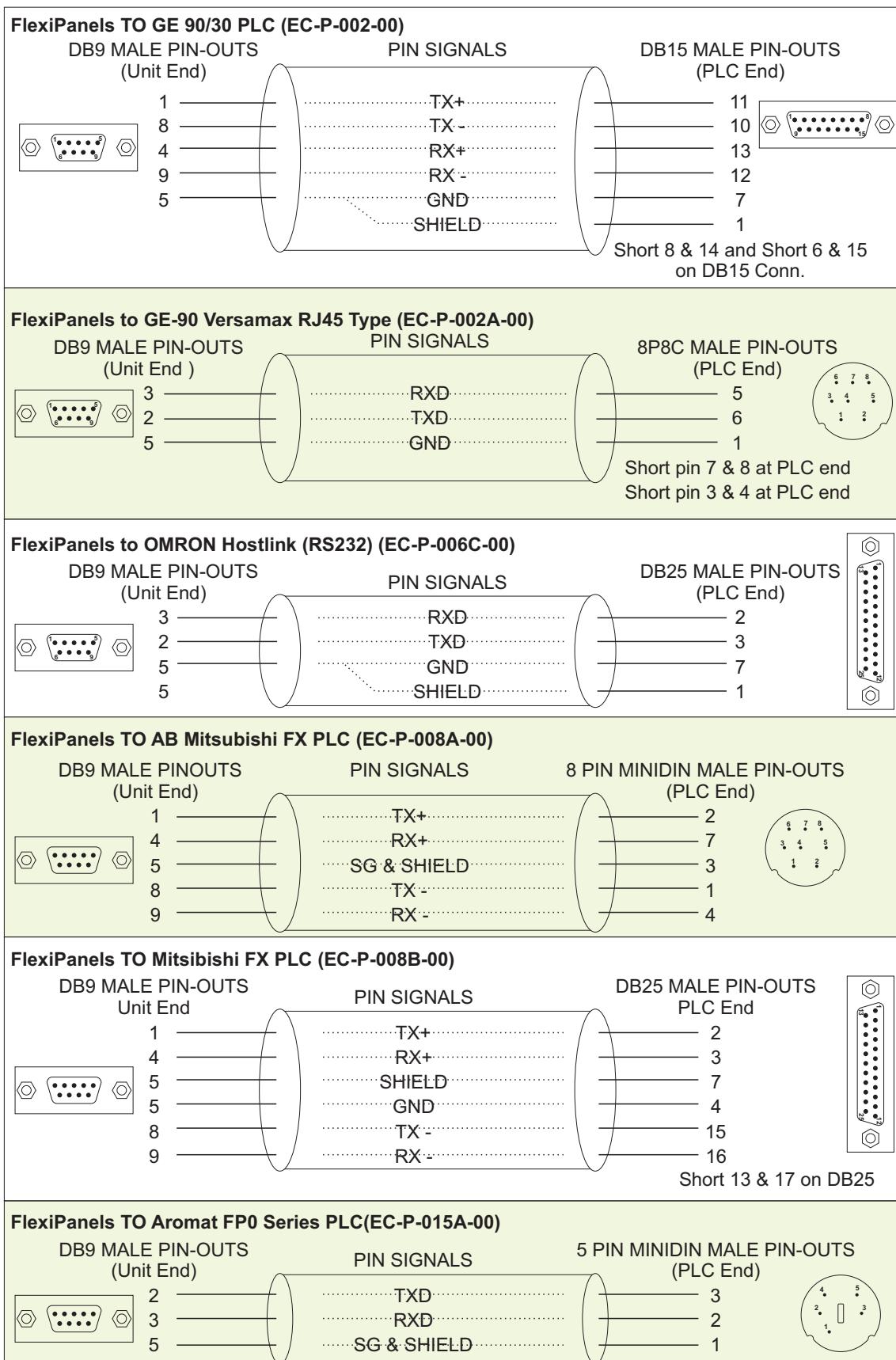
On DB9 Male connectors, use hex screws to fix further cables.

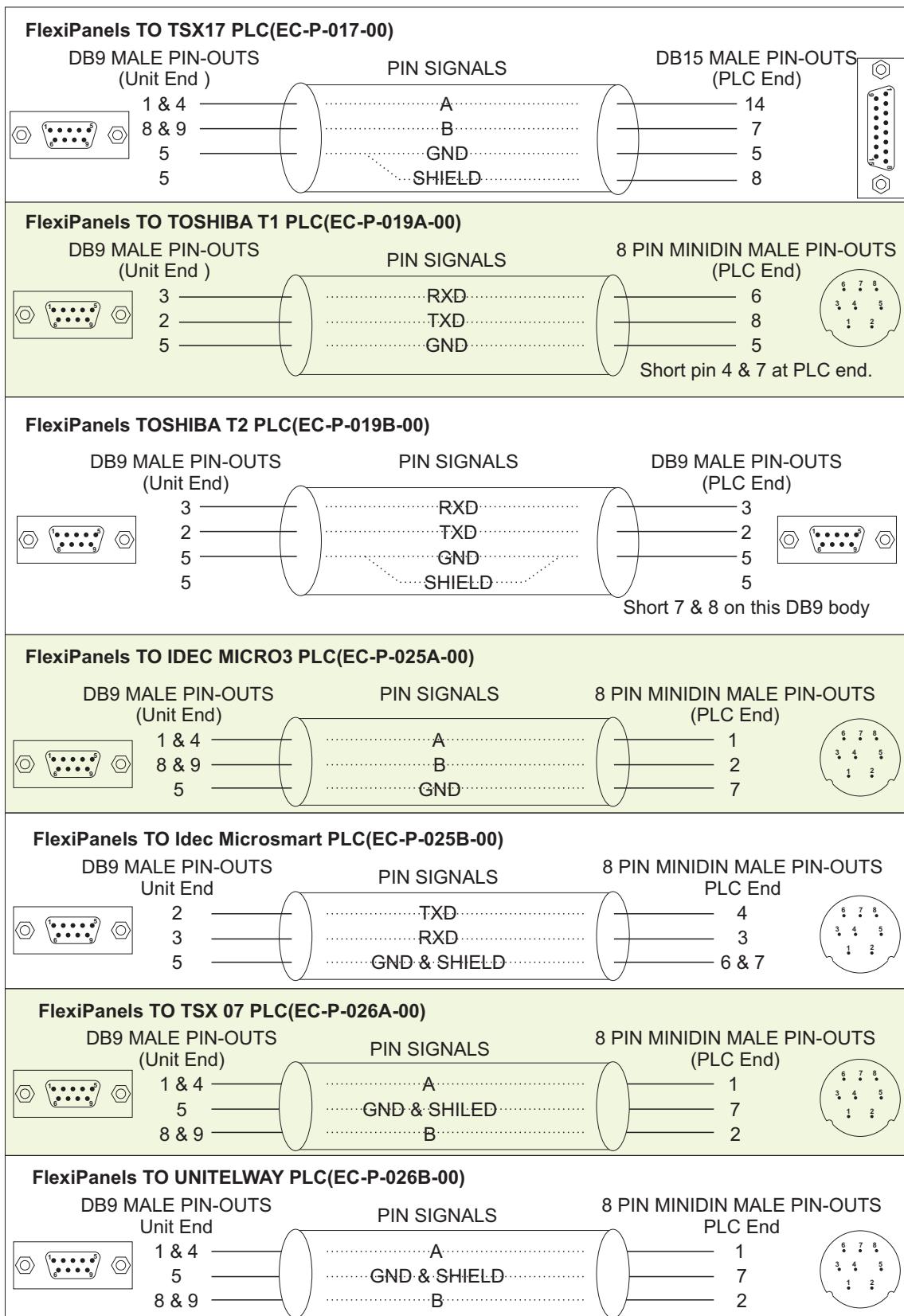
On DB9 Female connector, use hex nut (female counter part)

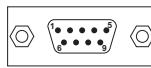
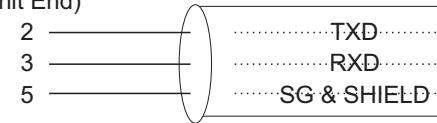
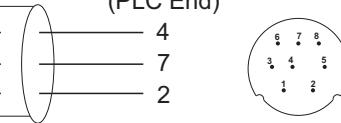
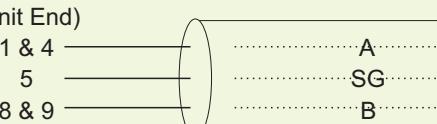
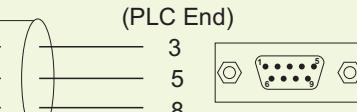
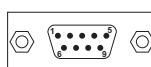
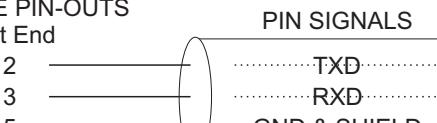
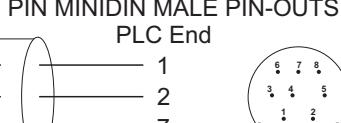
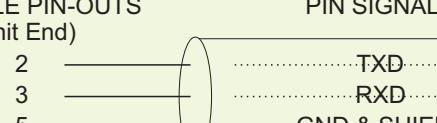
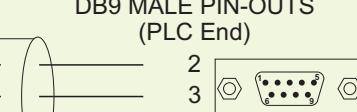
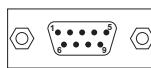
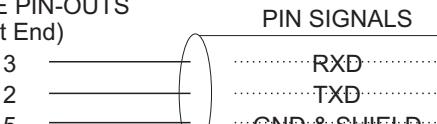
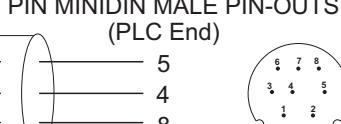
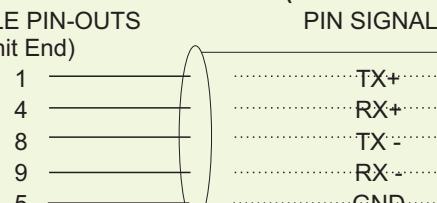
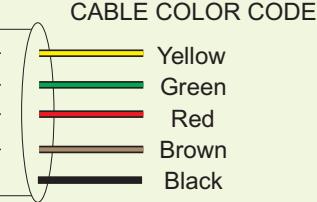
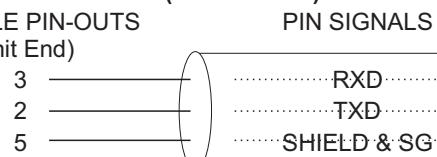
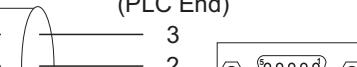
— : Cable Length 6" (Inches)  
 — : Cable Length 9" (Inches)

*FP\*:* Supports FP models with two communication levels on one port.

### 18.3 Communication Cables:





<b>FlexiPanels TO AB Micrologix PLC(EC-P-027A-00)</b>		
DB9 MALE PIN-OUTS (Unit End)	PIN SIGNALS	8 PIN MINIDIN MALE PIN-OUTS (PLC End)
  		
2	.....TXD.....	4
3	.....RXD.....	7
5	.....SG & SHIELD.....	2
<b>FlexiPanels TO Siemens Step-7 Micro PLC(EC-P-029-00)</b>		
DB9 MALE PIN-OUTS (Unit End)	PIN SIGNALS	DB9 MALE PIN-OUTS (PLC End)
  		
1 & 4	.....A.....	3
5	.....SG.....	5
8 & 9	.....B.....	8
Shield wire to this DB9 body only		
<b>FlexiPanels TO ABB AC 31(EC-P-036-00)</b>		
DB9 MALE PIN-OUTS Unit End	PIN SIGNALS	8 PIN MINIDIN MALE PIN-OUTS PLC End
  		
2	.....TXD.....	1
3	.....RXD.....	2
5	.....GND & SHIELD.....	7
Short 3 & 6		
<b>FlexiPanels TO LG MASTER K-SERIES(EC-P-037-00)</b>		
DB9 MALE PIN-OUTS (Unit End)	PIN SIGNALS	DB9 MALE PIN-OUTS (PLC End)
  		
2	.....TXD.....	2
3	.....RXD.....	3
5	.....GND & SHIELD.....	5
<b>FlexiPanels to Delta DVP PLC(EC-P-044-00)</b>		
DB9 MALE PIN-OUTS (Unit End)	PIN SIGNALS	8 PIN MINIDIN MALE PIN-OUTS (PLC End)
  		
3	.....RXD.....	5
2	.....TXD.....	4
5	.....GND & SHIELD.....	8
<b>FlexiPanels TO TOSHIBA T1 LINK PORT(EC-P-046A-00)</b>		
DB9 MALE PIN-OUTS (Unit End)	PIN SIGNALS	CABLE COLOR CODE
  		
1	.....TX+.....	Yellow
4	.....RX+.....	Green
8	.....TX-.....	Red
9	.....RX-.....	Brown
5	.....GND.....	Black
<b>FlexiPanels TO BALDOR PLC(EC-P-047-00)</b>		
DB9 MALE PIN-OUTS (Unit End)	PIN SIGNALS	DB9 FEMALE PIN-OUTS (PLC End)
  		
3	.....RXD.....	3
2	.....TXD.....	2
5	.....SHIELD & SG.....	5
Short 7 & 8 on DB9 female connector		

